Cassette Car Radio 22 DC 786/23
CD Car Radio 22 DC 986/23

Service
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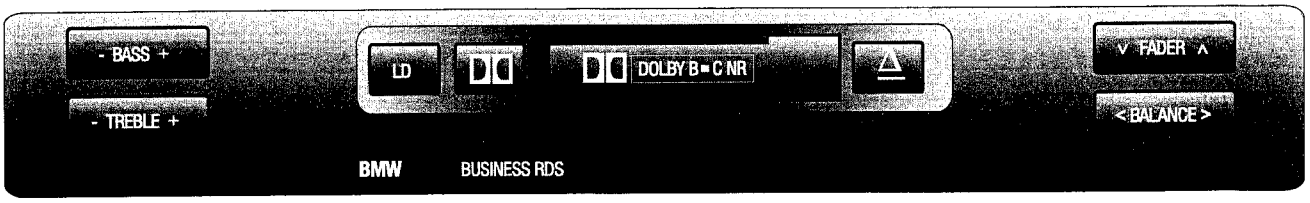
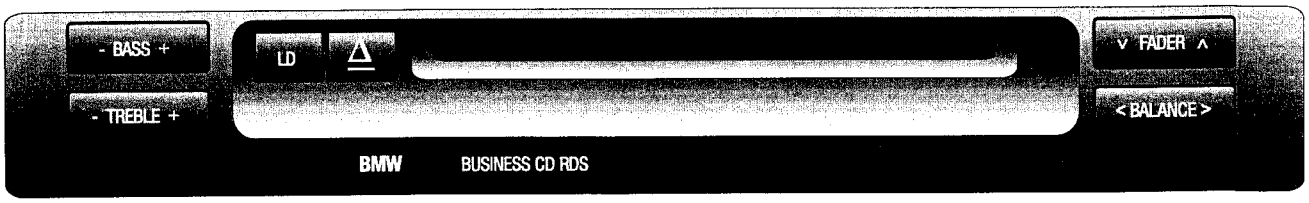
PHIL -05522

For repair instructions of the cassette deck see Service Manual SCA-4.4 (4822 725 23509)
For repair instructions of the CD deck see Service Manual CDM-9 MOD-4 (4822 725 23506)

Service Manual

12 V





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PHILIPS

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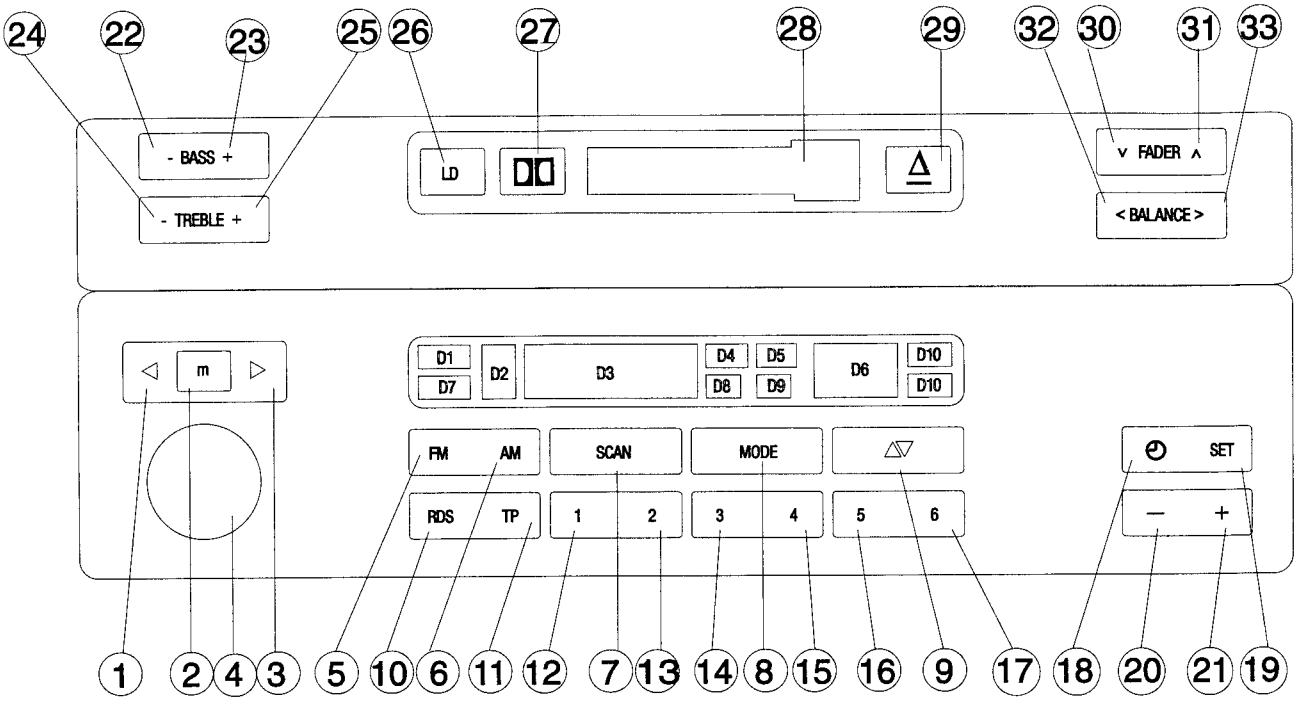
General

The carradios 22DC786 (C33) and 22DC986 (CD33) are part of the BMW E39-System and does not work stand alone.
To run these sets you have to connect the I-Bus line to the Iris-control and display unit. You have to pull up this I-Bus connection with a resistor of 2,2 KΩ to permanent +.
For more information about IRIS see Service Manual 22SY686 (4822 725 23527).

TECHNICAL DATA

GENERAL	Power supply	:	9...16 V (14,4V nom.)
	Quiescent current	:	0,5 mA
	Current FM	:	4,5 A (4 x 4 W)
TUNER	FM 87.5 - 108 MHz grid	:	100 kHz search, 100 kHz manual
	MW 531 - 1602 kHz grid	:	9 kHz search, 9 kHz manual
	LW 153 - 279 kHz grid	:	9 kHz search, 1 kHz manual
	SW 5.9 - 6.25 MHz grid	:	5 kHz search, 5 kHz manual
	Presets	:	6 FM1, 6 FM2, 6 FM-AST, 6 MW 6 LW, 6 SW
	IF (FM / AM)	:	10.7 MHz
CASSETTE	Number of tracks	:	2x2
	Tape speed	:	4,75 cm/s
	Winding time	:	100 s (C60)
	Frequency response	:	40 - 14.000 Hz
	Wow and flutter	:	0.2% (IEC 386 / DIN 45507)
	S/N ratio (Dolby off)	:	FE: 48 dB (weighted)
			CR: 53 dB (weighted)
CD	Frequency response	:	40 - 18000 Hz
	Distortion	:	0,05 % (1 KHz)
	SNR	:	> 70 dB
	Channel crosstalk	:	> 50 dB (1 KHZ)
AMPLIFIER	Output	:	4 x 12 W (at 10% THD)
	Bass	:	+/- 12 dB (60 Hz)
	Treble	:	+/- 12 dB (15 KHz)
	Treble FM	:	+/- 10 db (10 KHz)
	Channel separation	:	> 35 dB
	Telefonmute	:	> -40 dB

CONTROLS



IRIS

1	Tuning button down
2	Manual Tuning
3	Tuning button up
4	On/Off and volume
5	Selection of waveband FM
6	Selection of waveband AM
7	Station scan, CD title scan (optional)
8	Mode switch
9	Track selection of Cassette Deck
10	Activation of RDS
11	Activation of Traffic Program
12-17	Preset buttons 1-6, CD selection (optional)
18	Request clock display
19	Activation of clock setting
20	Clock setting button down
21	Clock setting button up

C33 / CD33

22	Sound setting bass down
23	Sound setting bass up
24	Sound setting treble down
25	Sound setting treble up
26	Loudness on/off
27	Activation of Dolby
28	Cassette / CD compartment
29	Cassette / CD eject button
30	Sound setting rear
31	Sound setting front
32	Sound setting left
33	Sound setting right

DISPLAY

D1	Indicator for of waveband, search levels, manual function
D2	Display of selected preset button
D3	Display of frequency, program name, cassette mode, CD number and track
D4	Indicator for RDS
D5	Indicator for Traffic Message Channel (currently not available)
D6	Display of clock
D7	Indicator for FM-Band Autostore
D8	Indicator for traffic program
D9	Indicator for 'Skip Blank' function (not available with C33 and CD33)
D10	Indicator for AM/PM in 12-h clock format

RADIO FUNCTIONS

Mode choice
Stepping through the different modes can be achieved by repetitive pressing of the Mode button [8]:
Tuner mode —> Cassette, resp.CD mode —> CD changer mode (optional) —> Tuner mode a.s.o.

Common hints to mode choice
If there is no medium (Cassette, CD-Magazine, CD) in the selected device or any malfunction is detected, the display [D3] shows an appropriate message:

– No cassette inserted:	Message NO TAPE
– No CD inserted:	Message NO DISC
– No magazine inserted into the changer:	Message NO MAGAZINE
– No CD in the magazine:	Message NO DISCS
– Faulty cassette:	Message TAPE ERROR
– Faulty or wrongly inserted CD:	Message CD ERROR
– Operation temperature exceeded:	Message HIGH TEMP

In these cases the device stays in the currently selected mode.
Nevertheless, the momentary impossible mode can be skipped by pressing the Mode button [8] again.

Waveband choice
FM bands: tap FM button [5] FM I —> FM II —> FM AUTO
AM bands: tap AM button [6]: MW —> LW —> SW

Station selection by automatic search
Press one of the tuning buttons < or > [1 or 3].
First run – search level 1, [D1] shows "I", second run – search level 2, [D1] shows "II".

Manual choice of selectivity:	Search for strong stations:	Tap tuning button [1 or 3] once.
	Search for weak stations:	Tap tuning button [1 or 3] twice.

Station selection by manual search
Press button m [2], the "MAN" indicator [D1] is lit. Tap tuning buttons to tune the frequency.

Reception of a RDS station
Tap button RDS [10] to toggle between RDS on and off. Indicator [D4] shows status.
If a RDS station is received, the display [D3] first shows the frequency and afterwards the program service name.

Regionalization
Press button RDS [10] for about 2 sec. Display [D3] will briefly indicate status REG ON / REG OFF

Traffic program
Switch on/off by using TP button [11], [D8] indicates status.
Only stations providing traffic messages are received. The set automatically searches a TP station ("TP" blinking).
The Cassette- or CD-Operation will be interrupted during of a traffic message.
If a traffic program is received, but the TP-function is not activated, the indicator [D8] displays the character "T".

Station storage manual
Press one of the preset buttons [12 - 17] about 2 sec. until the tuned station is audible again after a short mute.

Autostore
Keep FM button [5] pressed until display indicates "AUTOSTORE".
The strongest FM stations are stored on the preset buttons [12 - 17] (waveband FM AUTO).

Recall of a stored station
Select waveband [5 or 6] and tap desired preset button [12 - 17].

Station scan
Tap SCAN button [7]. The frequency band is scanned upwards with selectivity level I.
If a station with sufficient strength is found, it gets audible for 8 seconds. Afterwards the searching is continued.
During the scan, the display [D3] toggles between the string "SCAN" and the frequency of the station.
The scan function can be aborted by pressing SCAN [7] again or by selection of any other radio function.

CASSETTE OPERATION (only C33)

Start cassette operation
Insert cassette into the compartment [28] **or** if there is already a cassette inside, tap the Mode-Button [8].

Stop cassette operation
Press eject button [29]. The cassette is ejected **or** if the cassette should stay inside, tap the Mode-Button [8].

Dolby noise reduction
With every tap on button [27] the function changes between "Dolby B", "Dolby C", "Off".

Track selection
With every press of button [9], playback toggles between track 1 (NOR) and track 2 (REV).

Fast winding
Tap button "m" [2] and then within 2 sec. tuning button [3] for fast forward winding or [1] for fast reverse winding.
Stop winding by pressing button [1 or 3] again or by selection of another function.

Music search
Tap tuning button [1 or 3]. The tape winds to the begin of the next title, then the deck starts playback.
Stop search by pressing button [1 or 3] again or by selection of another function.

Clean
After every 20 hours of cassette operation, the message "TAPE CLEAN" is displayed.
Clean head and tape guidings with a wet cleaning cassette.

CD OPERATION (only CD33)

Start CD operation
Insert CD into the compartment [28] or if there is already a CD inside, tap the Mode-Button [8].

Stop CD operation
Press eject button [29], or if the CD should stay inside, press the Mode-Button [8].
If the CD is not removed from the player after eject, it is pulled in again automatically after a few seconds, but without changing to CD mode.

Cue and Review playback
First tap button "m" [2], then within 2 seconds press and hold tuning button [1 or 3] for fast playback.
After releasing the button, or when reaching the begin/end of the disc, the player resumes normal playback.
After 8 sec. the MANUAL function will automatically switch off.

Track up
Tap tuning button [3] to chose next track. If the button is held down, the track number is continuously incremented.

Track down
Tap tuning button [1] once to restart the current track.
Tap twice to chose previous track. If the button is held down, the track number is continuously decremented.

Scan search
Press SCAN button [7]. The tracks of the CD are played back for a few seconds in ascending order.
During the scan, the display [D3] toggles between the string "SCAN" and the number of the current track.
The scan function can be aborted by pressing "SCAN" [7] again or by selection of any other function.

Random playback
Keep button "SCAN" [7] pressed, until "RANDOM" appears. The tracks are played back in random order.
The display [D3] toggles between the string "RANDOM" and the number of the current track.
The random function can be aborted by pressing button [7] again or by selection of any other function.

CD CHANGER OPERATION (optional)

Start CD changer operation
Insert magazine into the CD changer or if there is already a magazine inside, tap the Mode-Button [8].

Stop CD changer operation
Press magazine eject button at the CD changer or if the magazine should stay inside, press the Mode-Button [8].

CD selection
Press button [12 - 17] to chose the desired CD. If there is no CD in the selected slot, "NO DISC" appears.

Cue playback, Track up/down, Scan search and Random playback
See the corresponding sections of the single CD operation.

C33/CD33 CONTROLS

Bass
Tap or keep pressed button [22] to decrease bass level and button [23] to increase bass level.
In the display, the current setting is indicated by the position of the vertical bar: BASS - ____II____ +

Treble
Tap or keep pressed button [24] to decrease treble level and button [25] to increase treble level.
In the display, the current setting is indicated by the position of the vertical bar: TREB - ____II____ +

Fader (front/rear)
Tap or keep pressed button [30] to increase the rear volume and button [31] to increase the front volume.
In the display, the current setting is indicated by the position of the vertical bar: FADR v ____II____ ^

Balance (left/right)
Tap or keep pressed button [32] to increase the left volume and button [33] to increase the right volume.
In the display, the current setting is indicated by the position of the vertical bar: BAL < ____II____ >

Loudness
Switch On/Off by tapping button [26].

Tone Linear
To adjust all tone settings to their central position, keep button [26] pressed until "TONE LINEAR" appears.

Volume adjustment
Adjust volume by turnknob [4].

SERVICE MODE

Enter: Switch set on and press 'm' button within 8 s for 8 s, set will automatically switch to radio mode.
Leave: Switch set off.

With the < and > keys you can scroll the different parameters:

DISPLAY SHOWS	EXAMPLE	DESCRIPTION
SN	S3000058	Serial number
SV	02-95 47	Software version
GAL	2	GALA (SDVC)

With preset buttons 1...4 you can select the desired GALA volume

Tuner mode (with presets 5 and 6 search down and search up is possible)

	105.9	D368	Frequency / PI
Press Preset 2:	FFH	RDS	PS / RDS on-off status
Press Preset 3:	F15 Q15 TAO		Fieldstrenght / Quality / TA status

Fieldstrength-range 0...15 (corresponds to 0...60 dBµV at aerial plug on FM and AM),
RDS quality-range 0...15 (RDS always switched on).

Press Preset 4:	FFOO 105.9	Quality / Fieldstrenght / Multipath / Noise / Frequency

Values in HEX format

TP-V	0	TA volume

With preset buttons 1 and 2 you can adjust the volume for traffic announcements.
The selected volume is audible.

SEEK	1	Search levels

With preset buttons 1 and 2 you can select search level 1 (high sensitivity) or 2 (less sensitivity).

DSP	0	DSP installed – 1 DSP not installed – 0
AREA	EUROPE	Tuner range (see table below)
Press Preset 2:	USA	
Press Preset 3:	USA + TP	

Tuner range table

AREA	BANDS	FREQUENCY	GRIDS AUTO / MAN
EUROPE	FM	87,5 - 108 MHz	0,1 / 0,1 MHz
	LW	153 - 279 KHz	9 / 1 KHz
	MW	531 - 1602 KHz	9 / 9 KHz
	SW	5900 - 6250 KHz	5 / 5 Khz
USA	FM	87,7 - 107,9 MHz	0,2 / 0,2 MHz
	AM	530 - 1710 KHz	10 / 10 KHz

USA + TP = USA with TP enabled

ON/OFF-LOGIC, POWER-SUPPLY and LOW VOLTAGE DETECTION

Functional description on/off logic and power supply

Different sources are able to switch the set on: KLR, EJECT, Cass.-insert, (Switch-SCA), LOADER_ON (CDM deck).
The ON/OFF logic combines these signals to generate a RESET for the µC.

The main power-on switch is a high-side state relay (VND05B) which supplies the voltage regulator IC (TDA 3602).
The voltages +5V(+5) and +8V5 are switched on under control of the VSC pin of the STABIC.
VSC low means normal operation.

The voltage +5V(+4) is at any time available if the buffered input voltage (pin 8) of the STABIC once increases to 8V.
For supply voltage breakdown (e.g. engine start) or overload conditions the STABIC is equipped with several Schmitt triggers which are combined in the "HOLD" circuit. The output signal HOLD is low at any fault condition of the STABIC (see next point).

The second part of the high-side state relay (second switchable voltage) supplies the SCA- or CDM9-deck.

Functional description low voltage detection

The low voltage detection makes use of the HOLD CIRCUIT CONTROL of the STABIC IC TDA 3602.
The output signal of the STABIC „HOLD" drives a mute stage (direct mute of the power amplifier stage) and the undervoltage signal for the mC (VLOW).
In case of low voltage or any other fault conditions the HOLD output is low.

Logic table for HOLD function:

inputs for HOLD (note 1) (typical values)					output
V(bu) (pin 8)	V(p) (pin 1)	on state (pin 4)	VR 1 (pin 2)	VR 2 (pin 9)	HOLD level (pin 5)
>7.9V	<7.1V	x	off	off	low
<3.0V	>7.6V	x	off	off	low
>7.9V	>7.6V	>2.0V	off	off	low
>7.9V	>7.6V	<1.1V	<8.2V	x	low
>7.9V	>7.6V	<1.1V	x	<4.7V	low
>7.9V	>7.6V	<1.1V	>8.3V	>4.8V	high

Note: 1. 0=off, 1=on, x=don't care
V(bu) = V(backup), pin 8
V(p) = supply voltage, pin 1
VR 1 = 8.5V output, switched under control of VSC
VR 2 = 5V output, switched under control of VSC

With a low on the VLOW signal line (= HOLD output) a software subroutine is executed, which stops every bus communication. The VLOW signal is measured for 50ms and after this time the µCs are sent to the sleep mode.
When the supply voltage returns to normal operating values the HOLD output goes high and the low voltage detection circuit generates a reset pulse to wake the µCs.

Inputs

KL.R:	switched power of the car-supply. level: V(batt)
EJECT:	signal to switch the carradio on if the cassette/CD has to be ejected. level: active low
SWITCH:	a positive pulse is generated if a cassette was feed through the cassette-deck. level: V(batt)
ON/OFF_µC:	additional control voltage to switch the main part of the high-side-state relay on
VSC:	additional control voltage to switch the +5V(+5) and +8V5 on (STABIC in on mode)
DECK_ON:	signal to switch on the supply voltage for the SCA/CDM9 deck.
LOADER_ON:	this signal is forced to GND if a CD is inserted

Outputs

RESET:	Reset pulse for the main-µC. A reset is generated during power-on and after power-down conditions. Level: TTL
KLR_µC:	logic high if KLR is active level: ANALOG
EJECT_µC:	processor-signal which is low if the EJECT button is pushed. Level: TTL
SWITCH_µC:	C33: processor-signal which goes high if a cassette was feed through the cassette deck. level: TTL CD33: processor-signal which goes low if a CD is inserted level: TTL
+14V4+2:	switched output voltage of the high-side-state relay.
+8V5:	output voltage of the STABIC switched under control of VSC
+5V+4:	output voltage of the STABIC. In this sets the voltage +5V(+4) is mainly used for digital parts.
+5V+5:	output voltage of the STABIC switched under control of VSC
+14V4+2a	switched supply voltage for SCA/CDM9 deck
HOLD	fault information of the STABIC
VLOW	low voltage information for the µC

Supply

+14V4+1:	supply voltage for the high side state relay outputs: 14V4+2, 14V4+2a
+14V4+2	supply voltage for the STABIC IC

Audio controls

1. Fader + Balance (adjust for 4 x 0,5 W at 1KHz)

Step	0	1	2	3	4	5	6	7	8	9	10
Volume (dB)	0	-1	-2	-3	-5	-6	-7	-10	-12	-15	mute
Stripe	.....II.....	.....I.....	.....I.....	.....I.....	.....I.....	.....I.....	.....I....	.....I...	.....I..	.....I.	I

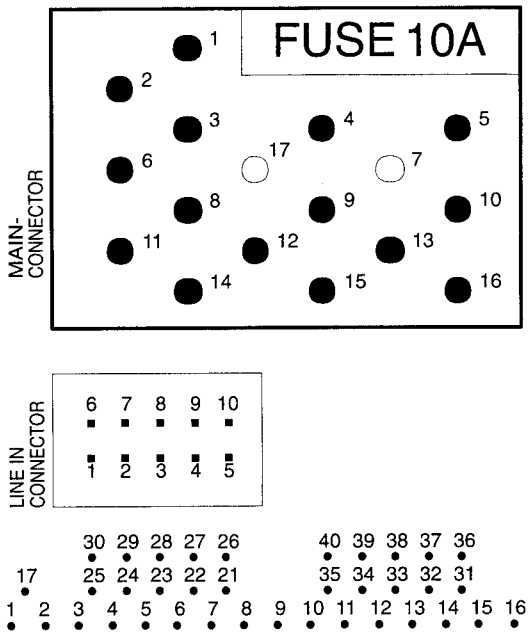
2. Treble and Bass (adjust for 4 x 0,5 W at 60 Hz for Bass / 15 KHz for treble

Step	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6
Volume (dB)	-12	-10,5	-7,5	-6	-4,5-	1,5	0	1,5	4,5	6	7,5	10,5	12
Stripe	I.....	.I.....	..I.....	...I.....	....I.....	.....I.....	.....II.....	.....I.....	.....I....	.....I...	.....I..	.....I..	I

3. FM Treble (adjust for 4 x 0,5 W at 10 KHz)

Step	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6
Volume (dB)	-10	-8,5	-6,5	-5,5	-4	-1,5	0	1,5	4	5,5	6,5	8,5	10
Stripe	I.....	.I.....	..I.....	...I.....	....I.....	.....I.....	.....II.....	.....I.....	.....I....	.....I...	.....I..	.....I.	I

CONNECTORBLOCK



1:	FL+	> 8	10:	GALA (SDVC)	> 6
2:	FR+	> 7	11:	RF-	>11
3:	RL+	>12	12:	LR-	>14
4:	TEL.MUTE	>17	13:	EXT.ILL.	> 5
5:	IGN.KEY	> 2	14:	RR-	>15
6:	RR+	>13	15:	GND	> 9
7:	I-BUS	> 4	16:	SWITCHED+	> 3
8:	LF-	>10	17:	N.C.	> 1
9:	PERM.+	>16			

1:	EXT.IN L+	>30	6:	EXT.IN L-	>25
2:	EXT.IN R+	>29	7:	EXT.IN R-	>24
3:	N.C.	>28	8:	N.C.	>23
4:	N.C.	>27	9:	N.C.	>22
5:	N.C.	>26	10:	N.C.	>21

Default settings (delivery status)

Volume	:	100mV at loudspeaker outputs (FM, Δf = 22,5 KHz, fmod = 1 KHz)
Tone	:	All tone controls in center position
Loudness	:	on
Radiomode	:	FM1, RDS on, REG on, TP off, Scan off
Tape mode	:	Tape 1, Dolby off, MSS off
Service mode	:	GAL = 2, SEEK = 1, TP-V = 0

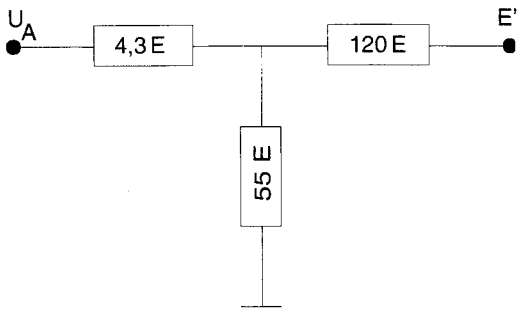
Button check

When pushing the different buttons the resistance between the named pins of connector 1840 must be lower than 500Ω

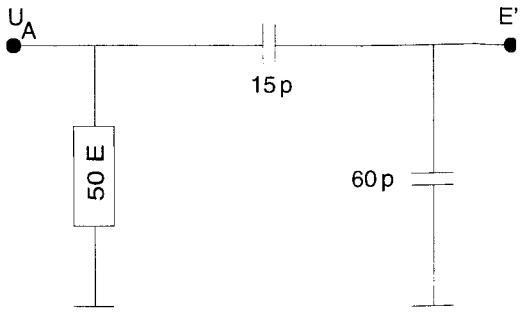
Button Eject	:	pins 1 + 7
Button LD	:	pins 4 + 5
Button Dolby	:	pins 4 + 6
Button Bass-	:	pins 2 + 5
Button Bass+	:	pins 2 + 6
Button Treble-	:	pins 3 + 5
Button Treble+	:	pins 3 + 6
Button Fader rear	:	pins 2 + 8
Button Fader front	:	pins 2 + 10
Button Balance left	:	pins 4 + 8
Button Balance right	:	pins 4 + 10

For adjustments and checks use the dummy aerials as shown in the figures, levels mentioned in the tables are UA-values.

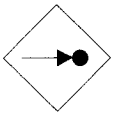
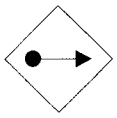
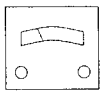
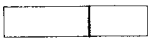
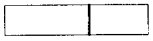
FM -6 dB



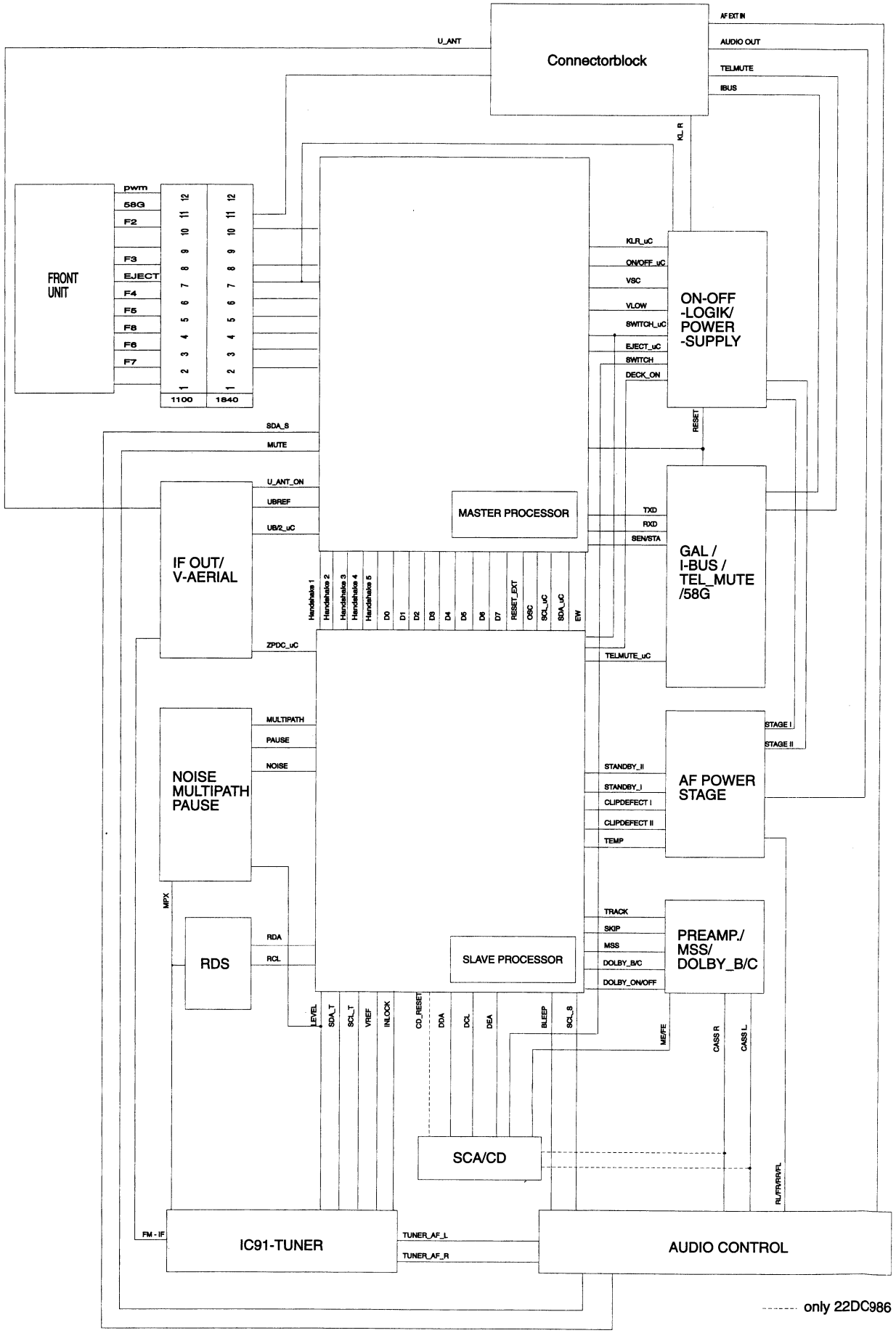
AM -14 dB



CHECKS AND ALIGNMENTS

Check	Band					
Demodulated FM-level	FM	98 MHz, 1 mV Δf = 22,5 KHz f mod = 1 KHz			FM 1100 PIN 11	150 - 250 mV_{eff} 3 V_{DC}
					FM 1100 PIN 5, 6	3,6 V_{DC}
		98 MHz, 1 mV Δf = 3,75 KHz f mod = 57 KHz			FM 1100 PIN 11	15 - 50 mV_{eff} 3 V_{DC}
					FM 1100 PIN 5, 6	3,6 V_{DC}
Demodulated AM-level	AM	999 KHz, 10 mV 1 KHz, 30% AM			IC 7206 PIN 16, 17	150 - 350 mV_{eff} 4 V_{DC}
Tel. mute	FM	94,1 MHz, 1 mV Δf = 22,5 KHz f mod = 1 KHz			Connectorblock PIN 1 + PIN 2	1,4 V => Referencelevel (dB)
		Connectorblock: connect PIN4 to GND				Referencelevel < - 40 dB
Noise limited sensitivity S/N 26 dB	FM	98,0 MHz, 8 µV Δf = 22,5 KHz f mod = 1 KHz			Connectorblock PIN 1 + PIN 2	1,4 V => Referencelevel (dB)
		98,0 MHz, 8 µV Δf = 22,5 KHz unmodulated				Referencelevel - 26 dB
	MW	999 KHz, 140 µV 30 % mod., 1 KHz				1,4 V => Referencelevel (dB)
		999 KHz, 140 µV unmodulated				Referencelevel - 26 dB
	LW	207 KHz, 300 µV 30 % mod., 1 KHz				1,4 V => Referencelevel (dB)
		207 KHz, 300 µV unmodulated				Referencelevel - 26 dB
	SW	6,1 MHz, 140 µV 30 % mod., 1 KHz				1,4 V => Referencelevel (dB)
		6,1 MHz, 140 µV unmodulated				Referencelevel - 26 dB
Search-sensitivities	FM	98,0 MHz, 28 µV Δf = 22,5 KHz f mod = 1 KHz		Search tuning up (Level 1)		search tuning must stop latest at the lowest of the 2 search levels (after first time run through)
	AM	999 KHz, 200 µV 30 % mod., 1 KHz				
IF output plug	FM	98MHz, 2 mV			Conn. 1500 PIN 1	> 12V (DC)
Noise-detector	FM	94,1 MHz, 1 mV Δf = 75 KHz f mod = 40 KHz		R 3444	IC 7421 PIN 14	1,4 Veff
Dolby level	CC	SBC 419 200 nWb / m 400 Hz	normal + reverse	R 3584 (right) R 3585 (left)	IC 7552 PIN 9 (right) PIN 20 (left)	300 mV (AC)

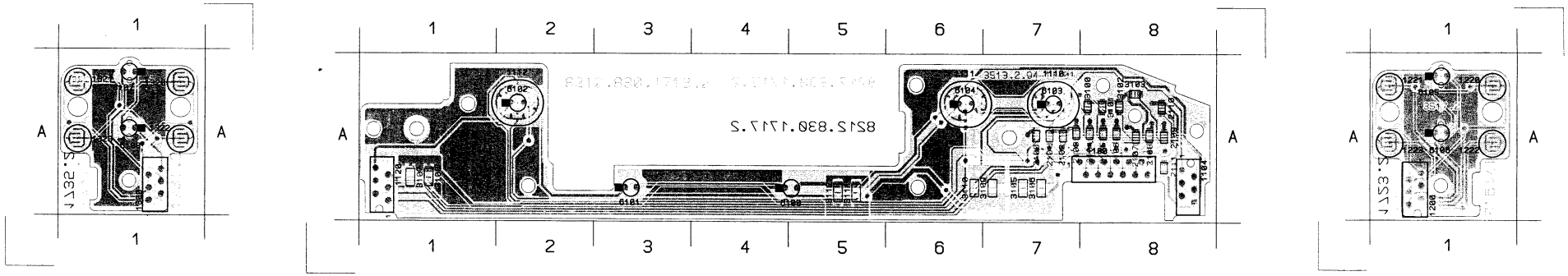
WIRING DIAGRAM



FRONT PWB's

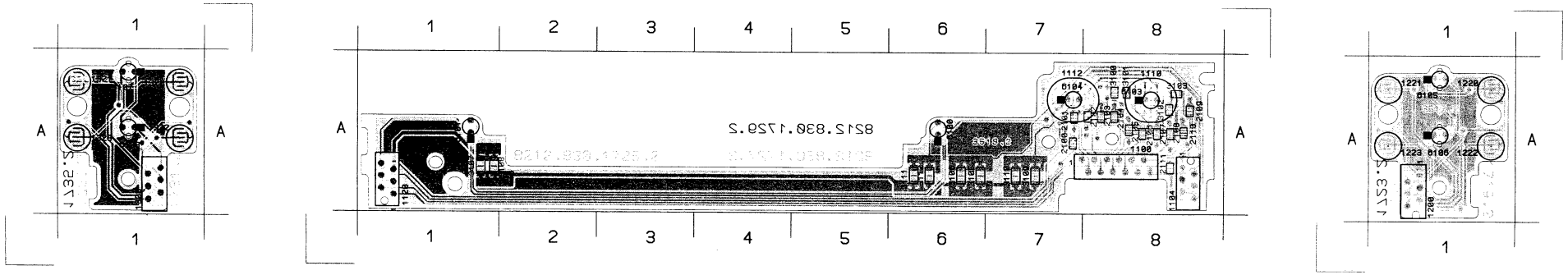
22 DC 786

1300 A 1	6107 A 1	1100 A 8	1120 A 1	2104 A 8	2109 A 8	3102 A 8	3108 A 1	6100 A 5	1200 A 1	6105 A 1
1320 A 1	6108 A 1	1104 A 8	2100 A 7	2105 A 8	2110 A 8	3103 A 8	3109 A 7	6101 A 3	1220 A 1	6106 A 1
1321 A 1		1110 A 7	2101 A 7	2106 A 8	2111 A 8	3105 A 7	3110 A 6	6102 A 2	1221 A 1	
1322 A 1		1111 A 6	2102 A 7	2107 A 8	3100 A 8	3106 A 7	3111 A 5	6103 A 7	1222 A 1	
1323 A 1		1112 A 2	2103 A 7	2108 A 8	3101 A 8	3107 A 1	3112 A 5	6104 A 6	1223 A 1	



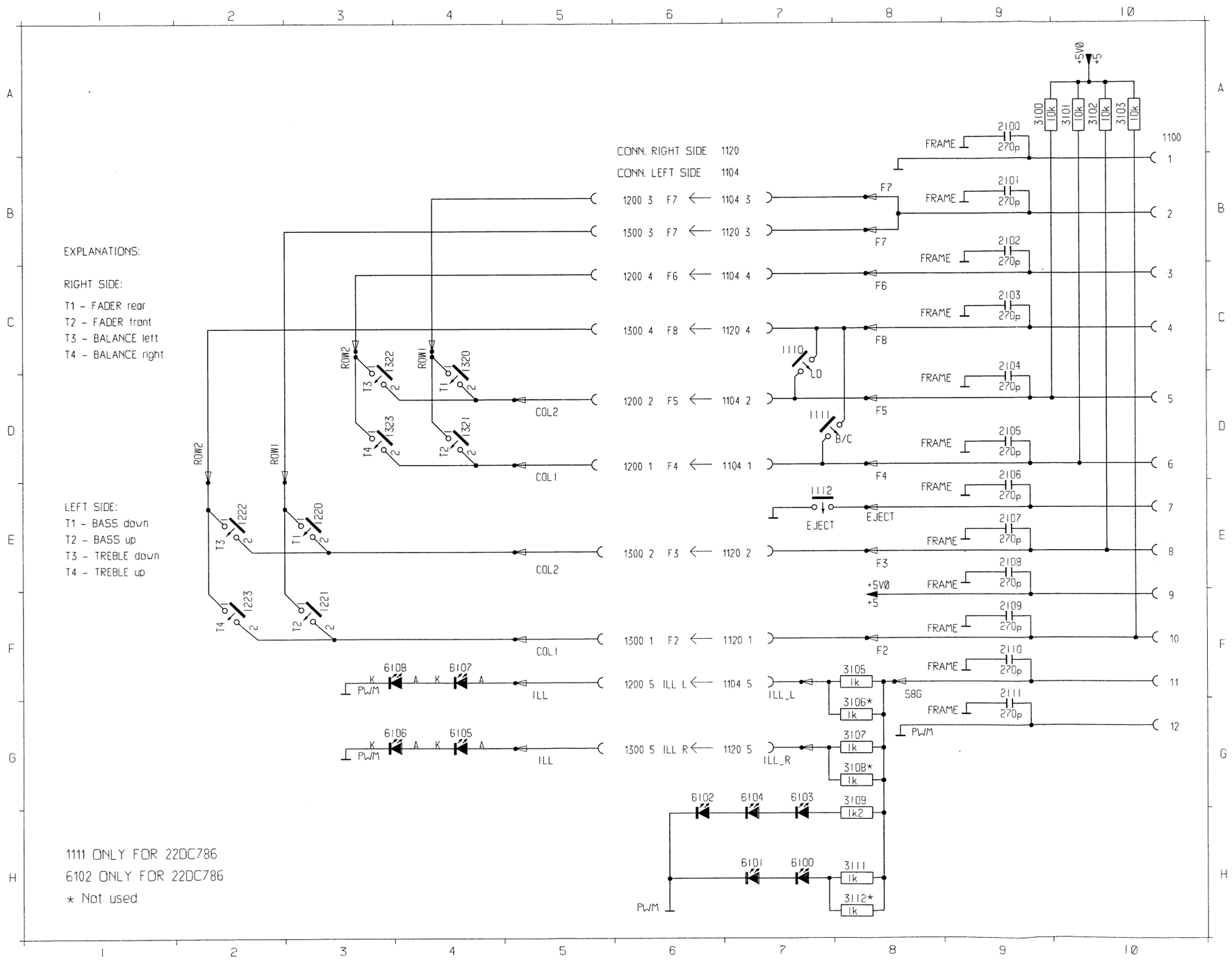
22 DC 986

1100 A 8	2100 A 7	2105 A 8	2110 A 8	3103 A 8	3109 A 7	6101 A 1
1104 A 8	2101 A 7	2106 A 8	2111 A 8	3105 A 6	3110 A 7	6103 A 8
1110 A 8	2102 A 8	2107 A 8	3100 A 8	3106 A 6	3111 A 6	6104 A 7
1112 A 7	2103 A 8	2108 A 8	3101 A 8	3107 A 1	3112 A 6	
1120 A 1	2104 A 8	2109 A 8	3102 A 8	3108 A 1	6100 A 6	

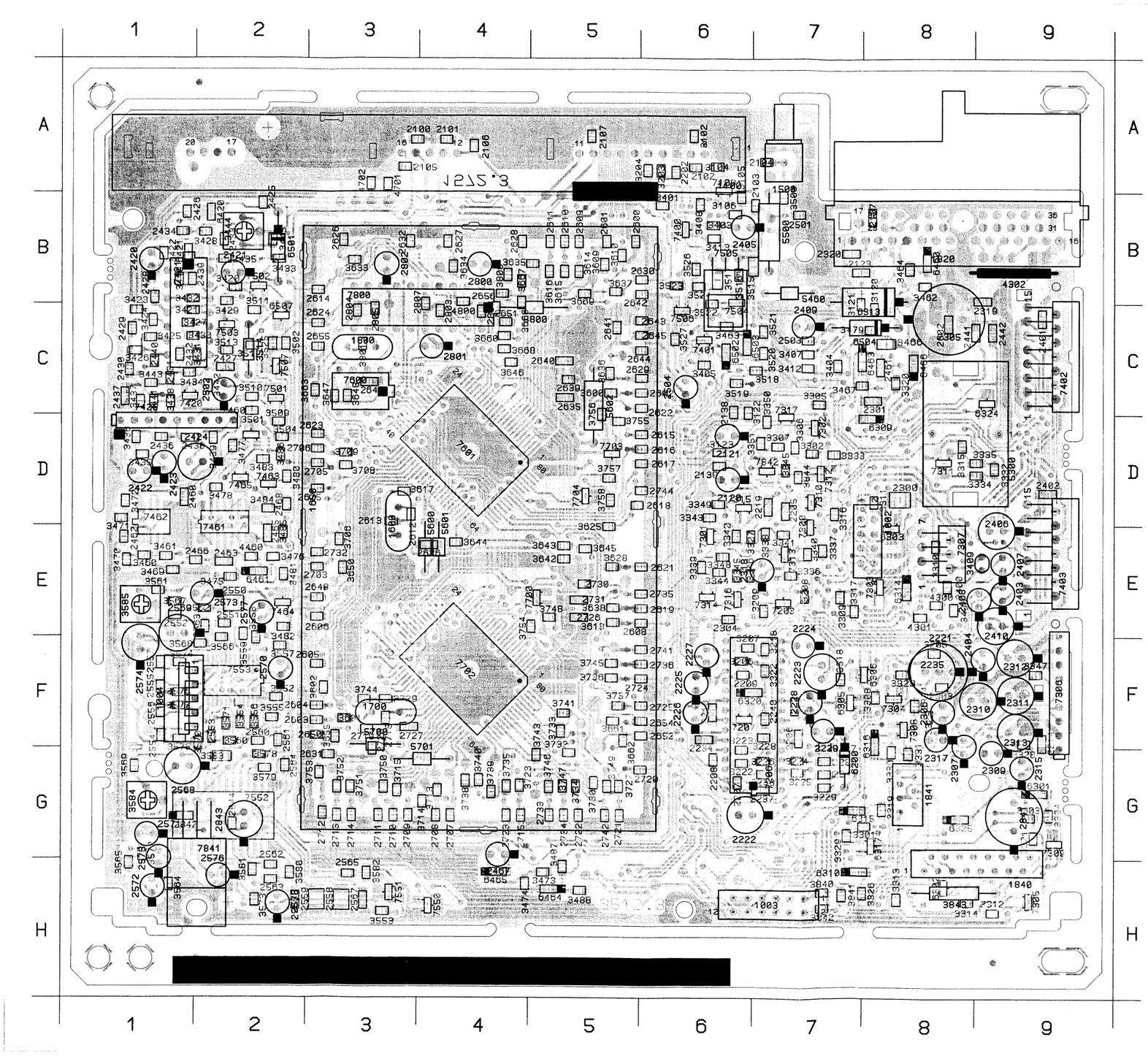


FRONT CIRCUIT

1100 A10	1220 E 3	1322 C 3	2104 C 9	2110 F 9	3105 F 8	3112 H 8	6105 G 4
1104 D 7	1221 F 3	1323 D 3	2105 D 9	2111 F 9	3106 G 8	6100 H 7	6106 G 4
1110 C 7	1222 E 2	2100 A 9	2106 D 9	3100 A 9	3107 G 8	6101 H 7	6107 F 4
1111 D 7	1223 F 2	2101 B 9	2107 E 9	3101 A10	3108 G 8	6102 G 6	6108 F 4
1112 E 7	1320 C 4	2102 B 9	2108 E 9	3102 A10	3109 G 8	6103 G 7	
1120 F 7	1321 D 4	2103 C 9	2109 F 9	3103 A10	3111 H 8	6104 G 7	



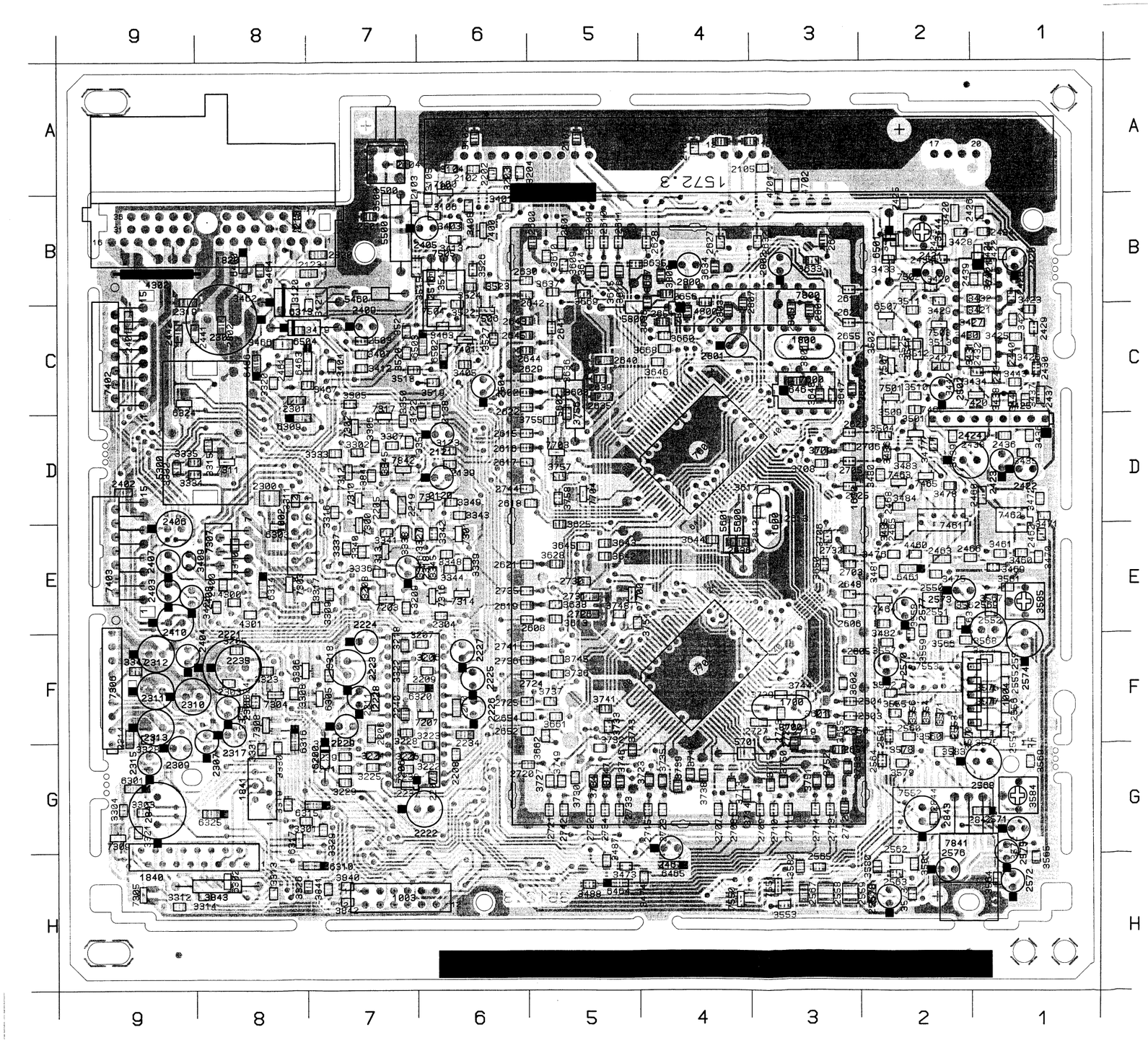
MAIN PWB A-side view



1002 E 8	2314 F 9	2563 H 2	2705 D 3	3227 F 7
1003 H 7	**2315 G 9**	2564 G 2	2706 D 3	3228 F 7
1004 F 2	**2317 F 8**	2565 H 3	2707 G 4	3229 G 7
1100 A 4	**2318 E 7**	2566 H 2	2708 G 4	3301 G 8
1500 A 7	2319 B 9	2567 H 3	2709 G 3	3302 D 7
1600 D 3	2320 B 7	**2568 G 1**	2710 G 3	3303 G 9
1650 E 4	2400 E 8	**2569 E 1**	2711 G 3	3304 G 9
1700 F 3	2401 C 9	**2570 F 2**	2712 G 3	3305 C 7
1800 C 3	2402 D 9	**2571 G 1**	2713 G 3	3306 D 7
1820 B 8	**2403 E 9**	**2572 H 1**	2714 G 3	3307 D 7
1840 H 9	**2404 F 9**	**2573 E 2**	2715 G 4	3308 F 8
1841 G 8	**2405 B 6**	**2574 F 1**	2718 F 3	3309 E 7
2100 A 3	**2406 E 9**	**2575 G 1**	2719 F 3	3310 E 8
2101 A 4	**2407 E 9**	**2576 H 2**	2720 G 6	3311 D 8
2102 A 6	**2408 E 9**	**2577 E 2**	2721 G 5	3312 H 9
2103 B 7	**2409 C 7**	**2578 H 2**	2722 G 5	3313 H 8
2104 A 7	**2410 E 9**	2600 B 5	2723 G 4	3314 H 8
2105 A 3	**2420 B 1**	2601 B 5	2724 F 6	3315 D 8
2106 A 4	**2421 B 2**	2602 C 6	2725 F 6	3316 D 7
2107 A 5	**2422 D 1**	2603 F 3	2726 E 5	3317 E 7
2120 D 6	**2423 D 1**	2604 F 3	2727 F 3	3318 F 7
2121 D 6	**2424 D 2**	2605 F 3	2728 G 3	3319 G 8
2123 B 7	2425 B 2	2606 E 3	2730 E 5	3320 C 8
2137 B 8	2426 B 1	2608 E 6	2731 E 5	3321 G 9
2138 C 6	2427 C 2	2609 B 5	2732 E 3	3322 F 7
2139 D 6	2428 B 1	2610 B 5	2733 G 5	3323 F 8
2201 A 6	2429 C 1	2611 B 5	2734 G 5	3324 F 8
2202 A 6	2430 C 1	2612 D 3	2735 E 6	3325 F 8
2205 D 7	2431 C 1	2613 D 3	2736 F 6	3326 H 7
2206 F 7	2432 C 1	2614 B 3	2741 F 6	3327 E 6
2207 G 6	2433 B 2	2615 D 6	2742 G 5	3328 F 9
2208 G 6	2434 B 1	2616 D 6	2744 D 6	3329 G 7
2209 F 6	2435 B 2	2617 D 6	**2800 B 4**	3330 G 8
2210 F 6	2436 D 1	2618 D 5	**2801 C 4**	3331 G 8
2211 F 7	2437 C 1	2619 E 6	**2802 B 3**	3332 D 9
2219 D 7	2438 D 1	2621 E 6	2803 C 4	3333 D 7
2221 F 8	2439 B 1	2622 C 6	2804 C 3	3334 D 9
2222 G 6	2440 C 1	2623 D 3	2805 C 3	3335 D 9
2223 F 7	2441 C 9	2624 C 3	2806 C 4	3336 E 7
2224 F 7	2442 C 9	2625 D 3	2807 C 4	3337 E 7
2225 F 6	2460 D 1	2626 B 3	**2841 G 9**	3338 E 7
2226 F 6	2461 C 8	2627 B 4	2842 G 1	3339 E 6
2227 F 6	2462 E 1	2628 B 4	**2843 G 2**	3340 E 7
2228 F 7	2463 E 2	2629 C 6	2844 G 2	3341 E 7
2229 F 7	2465 E 2	2650 B 6	3102 A 6	3342 E 6
2234 F 6	2466 E 2	2631 G 3	3104 A 6	3343 D 6
2235 F 8	**2467 G 4**	2632 B 3	3105 B 6	3344 F 6
2237 G 7	2468 D 2	2635 C 5	3106 B 6	3345 E 6
2238 G 7	2501 B 7	2636 E 4	3120 C 8	3346 E 6
2239 G 7	**2502 C 2**	2639 C 5	3121 B 7	3347 F 9
2240 F 7	2503 C 7	2640 C 5	3122 C 6	3348 E 6
2241 G 7	**2504 C 6**	2641 C 5	3123 D 6	3349 D 6
2300 D 8	2550 E 2	2642 B 6	3203 A 6	3350 D 7
2301 C 8	2551 F 2	2643 C 6	3204 A 6	3351 D 7
2302 C 8	2552 E 1	2644 C 6	3205 F 6	3400 E 8
2303 F 8	2553 F 2	2645 C 6	3206 F 6	3401 B 6
2304 E 6	2554 F 1	2646 C 3	3207 F 6	3403 B 6
2305 C 8	2555 F 1	2648 E 3	3208 E 7	3404 C 7
2306 F 8	2556 F 1	2650 F 3	3209 E 7	3405 C 6
2307 F 8	2557 F 1	2651 C 4	3218 F 7	3407 C 7
2309 G 9	2558 H 3	2652 F 6	3222 G 6	3408 B 6
2310 F 9	2559 H 3	2654 F 6	3223 G 6	**3409 E 9**
2311 F 9	2560 F 2	2655 C 3	3224 G 7	3412 C 7
2312 F 9	2561 F 2	2656 B 4	3225 G 7	3413 B 6
2313 F 9	2562 H 2	2703 E 3	3226 G 7	3420 B 2

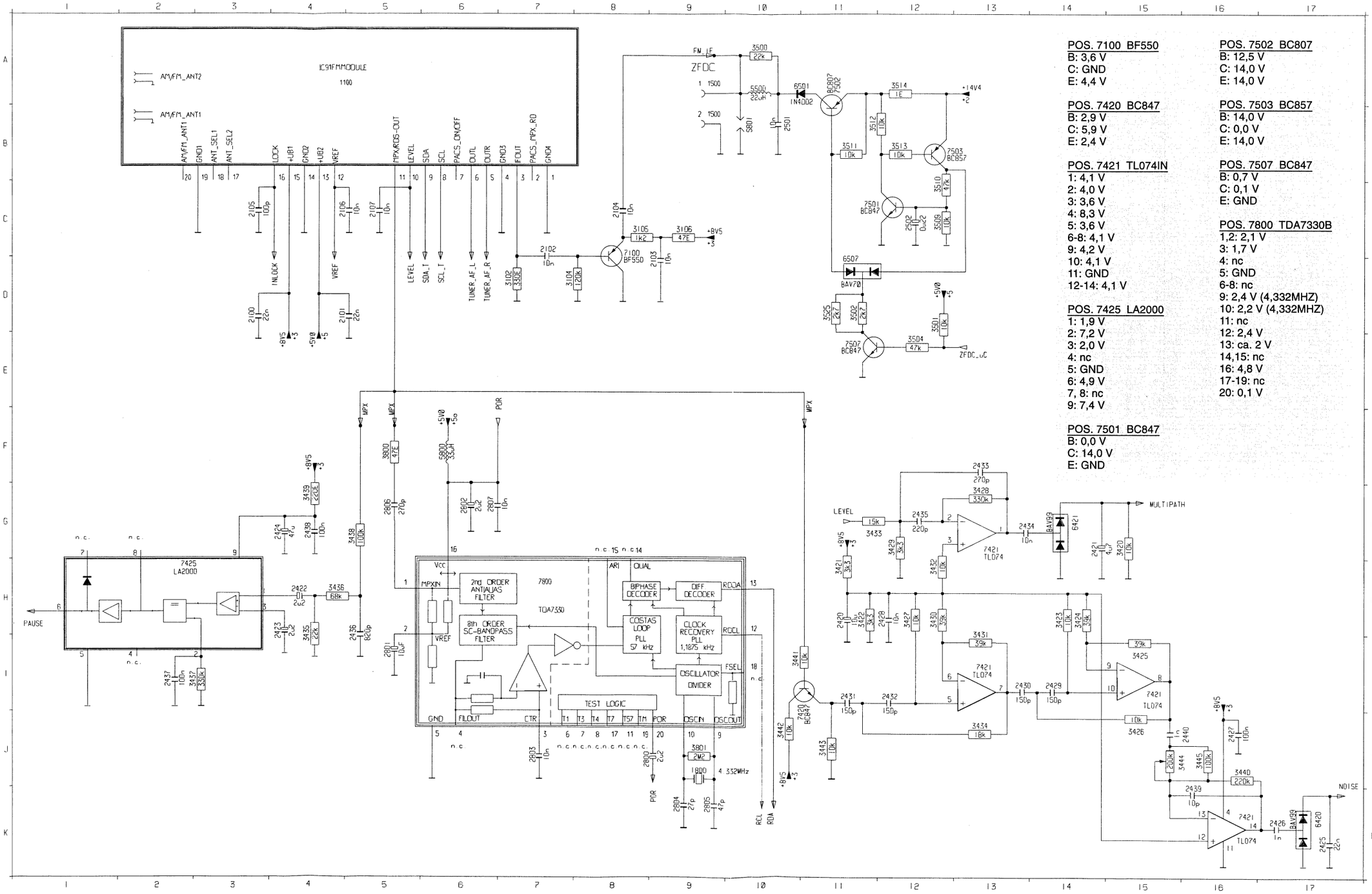
3421 C 1	3518 C 7	3645 E 5	5300 D 8	7421 C 1
3422 B 1	3519 C 6	3646 C 4	5460 B 7	7425 D 1
3423 C 1	3520 C 7	3647 C 3	5500 B 7	7460 D 2
3424 C 1	3521 C 7	3648 C 3	5600 E 4	7461 D 2
3425 C 1	3522 B 6	3650 E 3	5601 E 4	7462 D 1
3426 C 1	3523 B 6	3655 F 3	5602 C 5	7463 D 2
3427 C 1	3524 B 6	3660 C 4	5700 F 3	7464 E 2
3428 B 2	3525 C 2	3661 F 5	5701 G 4	7465 D 2
3429 B 2	3526 B 6	3662 F 5	5800 C 5	7501 C 2
3430 C 1	3527 C 6	3663 C 3	6200 G 7	7502 B 2
3431 C 2	3552 F 2	3666 B 4	6301 G 9	7503 C 2
3432 B 1	3553 H 3	3667 B 4	6302 H 8	7504 B 6
3433 B 2	3554 F 2	3668 C 4	6303 E 8	7505 B 6
3434 C 1	3555 F 2	3669 B 5	6305 F 7	7506 C 6
3435 D 1	3556 F 2	3706 E 3	6306 F 8	7507 C 2
3436 D 1	3557 F 2	3708 D 3	6309 D 8	7550 H 4
3437 C 1	3558 F 2	3709 D 3	6310 H 7	7551 H 3
3438 C 1	3559 E 2	3713 G 4	6313 B 8	7552 G 2
3439 D 2	3560 F 2	3714 G 4	6314 E 8	7553 F 2
3440 B 1	3561 E 1	3715 G 3	6315 G 7	7600 C 3
3441 C 1	3562 E 2	3723 G 4	6316 F 8	7601 D 4
3442 C 2	3563 E 2	3727 G 5	6317 G 8	7700 E 5
3443 C 1	3564 H 1	3729 F 3	6320 F 7	7702 F 4
3444 B 2	3565 H 1	3730 G 5	6324 C 9	7703 D 5
3445 B 2	3566 F 2	3732 G 5	6325 G 8	7704 D 5
3460 E 1	3567 E 1	3733 F 5	6420 B 2	7800 C 3
3461 E 1	3568 F 2	3734 G 5	6421 B 1	7841 H 2
3462 B 8	3569 G 1	3735 G 4	6460 B 8	7842 D 7
3463 C 6	3570 F 2	3736 F 5	6461 E 2	J201 B 8
3464 B 8	3571 F 2	3737 F 5	6463 C 7	JE01 G 5
3466 C 8	3572 G 1	3738 G 4	6464 H 5	JE02 G 4
3467 C 7	3573 H 2	3739 G 4	6465 H 4	JE03 G 8
3469 E 1	3574 F 1	3740 G 4	6466 C 8	JE04 G 3
3470 E 1	3575 F 1	3741 F 5	6501 B 2	JE05 G 4
3471 D 1	3576 F 1	3743 G 5	6502 C 6	JE06 G 4
3472 D 1	3577 F 1	3744 F 3	6503 C 6	JE07 G 8
3473 H 5	3578 G 2	3745 F 5	6504 C 8	JE08 G 3
3474 H 4	3579 G 2	3746 G 5	6507 C 2	JE09 C 8
3475 E 2	3580 H 2	3747 G 5	7100 A 6	JE10 C 5
3476 E 2	3581 H 2	3748 E 5	7203 E 7	S701 A 8
3477 D 2	3582 H 3	3749 G 5	7206 F 7	S801 B 7
3478 D 2	3583 G 2	3750 G 3	7207 F 6	
3479 C 8	3584 G 1	3751 G 3	7300 E 7	
3480 D 2	3585 E 1	3752 G 3	7301 E 6	
3481 E 2	3600 C 5	3753 G 3	7302 D 7	
3482 E 2	3601 F 3	3754 E 5	7303 E 8	
3483 D 2	3602 F 3	3755 D 5	7304 F 8	
3484 D 2	3609 B 5	3756 C 5	7305 H 9	
3485 E 2	3610 B 5	3757 D 5	7306 F 9	
3486 D 2	3613 E 5	3758 D 5	7307 E 8	
3487 H 5	3614 B 5	3800 B 4	7308 F 8	
3488 H 5	3615 B 5	3801 C 3	7309 G 9	
3500 B 7	3616 B 5	3840 H 7	7310 D 7	
3501 C 2	3617 D 3	3841 H 7	7311 D 8	
3502 C 2	3625 E 5	3842 H 7	7312 D 7	
3504 D 2	3628 E 5	3843 H 8	7313 E 7	
3509 D 2	3633 B 3	3844 D 7	7314 E 6	
3510 C 2	3634 B 4	3845 D 7	7315 D 6	
3511 C 2	3635 B 5	4300 E 8	7316 E 6	
3512 C 2	3636 C 5	4301 E 8	7317 D 7	
3513 C 2	3637 B 5	4302 B 9	7400 B 6	
3514 C 2	3638 E 5	4460 E 2	7401 C 6	
3515 B 7	3642 E 5	4701 A 3	7402 C 9	
3516 B 6	3643 E 5	4702 A 3	7403 E 9	
3517 B 6	3644 E 4	4800 B 4	7420 C 1	

MAIN PWB B-side view



TUNER/RDS/NOISE/MULTIPATH

1100	A 4	2103	D 9	2422	H 4	2429	I 4	2436	H 5	2800	J 8	2807	G 6	3422	H 11	3429	G 12	3436	H 4	3443	J 11	3509	C 12	3800	F 5	6507	D 11	7425	H 3
1500	A 9	2104	C 8	2423	H 4	2430	I 3	2437	I 2	2801	I 5	3102	D 7	3423	H 14	3430	H 12	3437	I 3	3444	J 16	3510	C 12	3801	J 9	7100	C 8	7501	C 12
1500	B 9	2105	C 3	2424	G 4	2431	I 11	2438	G 4	2802	G 6	3104	D 7	3424	H 14	3431	I 13	3438	G 5	3445	J 16	3511	B 11	5500	A 10	7420	I 11	7502	A 11
1800	J 9	2106	C 4	2425	K 17	2432	I 12	2439	K 16	2803	J 7	3105	C 8	3425	I 15	3432	H 12	3439	G 4	3500	A 10	3512	B 11	5800	F 6	7421	G 13	7503	B 12
2100	D 3	2107	C 5	2426	K 17	2433	F 13	2440	J 16	2804	K 9	3106	C 9	3426	J 15	3433	G 11	3440	J 16	3501	D 12	3513	B 12	6420	K 17	7421	I 13	7507	E 11
2101	D 4	2420	H 11	2427	J 16	2434	G 13	2501	B 10	2805	K 9	3420	G 15	3427	H 12	3434	J 13	3441	I 10	3502	D 11	3514	A 12	6421	G 14	7421	I 15	7800	H 7
2102	C 7	2421	G 14	2428	H 12	2435	G 12	2502	C 12	2806	G 5	3421	H 11	3428	G 13	3435	H 4	3442	J 10	3504	E 12	3525	D 11	6501	A 11	7421	K 16	S801	B 10



POS. 7100 BF550
B: 3,6 V
C: GND
E: 4,4 V

POS. 7420 BC847
B: 2,9 V
C: 5,9 V
E: 2,4 V

POS. 7421 TL074IN
1: 4,1 V
2: 4,0 V
3: 3,6 V
4: 8,3 V
5: 3,6 V
6-8: 4,1 V
9: 4,2 V
10: 4,1 V
11: GND
12-14: 4,1 V

POS. 7425 LA2000
1: 1,9 V
2: 7,2 V
3: 2,0 V
4: nc
5: GND
6: 4,9 V
7, 8: nc
9: 7,4 V

POS. 7501 BC847
B: 0,0 V
C: 14,0 V
E: GND

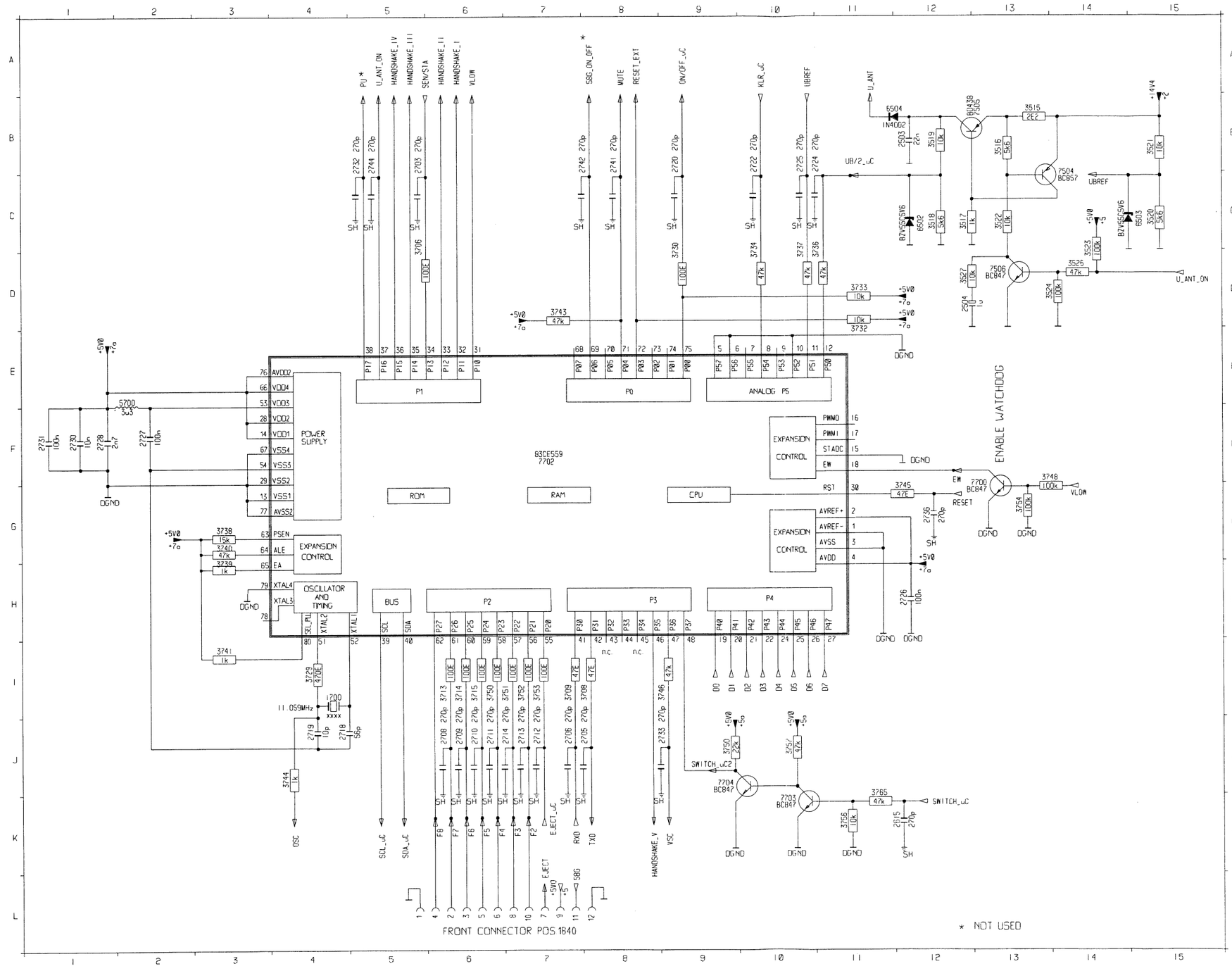
POS. 7502 BC807
B: 12,5 V
C: 14,0 V
E: 14,0 V

POS. 7503 BC857
B: 14,0 V
C: 0,0 V
E: 14,0 V

POS. 7507 BC847
B: 0,7 V
C: 0,1 V
E: GND

POS. 7800 TDA7330B
1,2: 2,1 V
3: 1,7 V
4: nc
5: GND
6-8: nc
9: 2,4 V (4,332MHZ)
10: 2,2 V (4,332MHZ)
11: nc
12: 2,4 V
13: ca. 2 V
14,15: nc
16: 4,8 V
17-19: nc
20: 0,1 V

MASTER COMPUTER



1700 I 4
2503 B12
2504 D12
2615 K12
2703 B 5
2705 J 8
2706 J 7
2708 J 6
2709 J 6
2710 J 6
2711 J 6
2712 J 7
2713 J 7
2714 J 7
2718 J 4
2719 J 4
2720 B 9
2722 B10
2724 B11
2725 B10
2726 H12
2727 F 2
2728 F 1
2730 F 1
2731 F 1
2732 B 5
2733 J 9
2736 G12
2741 B 8
2742 B 8
2744 B 5
3515 B13
3516 B13
3517 C12
3518 C12
3519 B12
3520 C15
3521 B15
3522 C13
3523 C14
3524 D14
3526 D14
3527 D12
3706 C 5
3708 I 8
3709 I 7
3713 I 6
3714 I 6
3715 I 6
3729 I 4
3730 C 9
3732 E11
3733 D11
3734 C10
3736 C11
3737 C10
3738 G 3
3739 H 3
3740 G 3
3741 I 3
3743 D 7
3744 J 4
3745 G12
3746 I 9
3748 F13
3750 J 9
3750 I 6
3751 I 7
3752 I 7
3753 I 7
3754 G13
3756 K11
3757 J10
3765 K11
5700 E 2
6502 C12
6503 C15
6504 B12
7504 C14
7505 B13
7506 D13
7700 G13
7702 F 7
7703 K10
7704 J 9

POS. 7504 BC857
B: 14,0 V
C: 12,6 V
E: 14,0 V

POS. 7505 BD438
B: 12,6 V
C: 14,0 V
E: 14,0 V

POS. 7506 BC847
B: 0,0 V
C: 14,0 V
E: GND

POS. 7700 BC847
B: 0,6 V
C: 0,0 V
E: GND

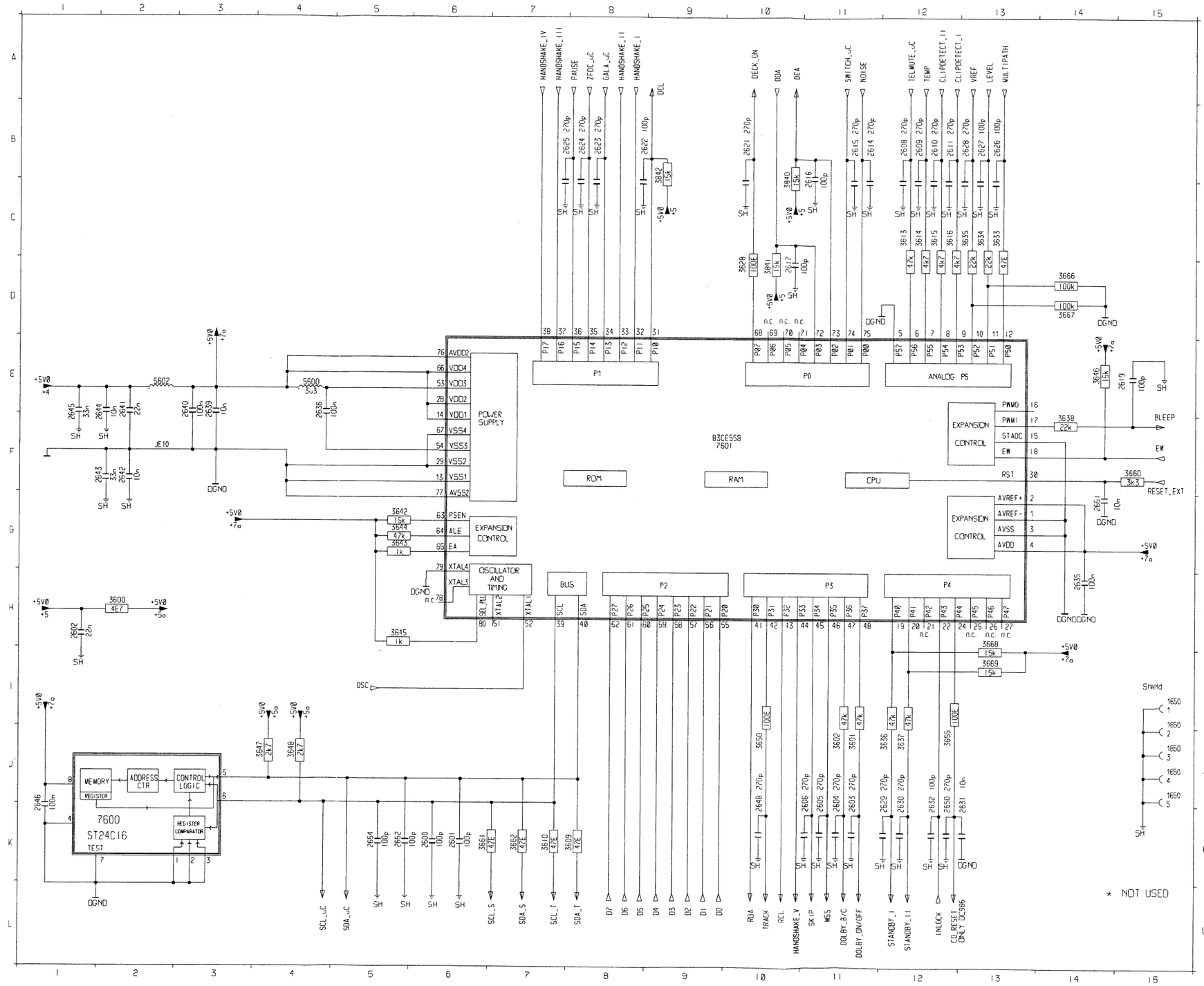
POS. 7702 P83CE559EFB/015
1: GND
2: 4,9 V
3: GND
4: 4,9 V
5, 6: GND
7: nc
8: 5,2 V
9: nc
10: GND
11, 12: 4,6 V
13: GND
14: 4,9 V
15: GND
16, 17: nc
18: 0,0 V
19-22: 4,9 V
23: nc
24-28: 4,9 V
29: GND
30: 0,0 V
31: 4,6 V
32-36: 4,9 V
37, 38: 0,0 V
39, 40: 4,8 V
41, 42: 4,9 V
43-45: nc
46: 4,9 V
47: 4,2 V
48: 5,0V / 0,2V (CASS. MODE)
49, 50: nc
51: 2,4 V (11MHZ)
52: 2,0 V (11MHZ)
53: 4,9 V
54: 0,0 V
55: 4,9V / 0,3V (EJECT BUTTON PRESSED)
56-63: 4,9 V
64: 0,0 V
65, 66: 4,9 V
67: GND
68: nc
69: 0,0 V
70: nc
71, 72: 0,0 V
73, 74: nc
75: 4,7 V
76: 4,9 V
77: GND
78: nc
79: GND
80: 4,9 V

POS. 7703 BC847
B: 5,0V / 0,2V (CASS. MODE)
C: 0,0V / 5,0V (CASS. MODE)
E: GND

POS. 7704 BC847
B: 0,0V / 5,0V (CASS. MODE)
C: 5,0V / 0,2V (CASS. MODE)
E: GND

POS. 7841 L7805ABV (ONLY 986)
1: 14,0 V
2: GND
3: 4,9 V

SLAVE COMPUTER



1650	I15	
1650	I15	
1650	J15	
1650	J15	
1650	J15	
2600	K 6	
2601	K 6	
2602	H I	
2603	J11	
2604	J11	
2605	J11	
2606	J11	
2608	B12	
2609	B12	
2610	B12	
2611	B12	
2614	B11	
2615	B11	
2616	B11	
2617	D10	
2619	E15	
2621	B10	
2622	B 8	
2623	B 8	
2624	B 8	
2625	B 7	
2626	B13	
2627	B13	
2628	B13	
2629	J12	
2630	J12	
2631	J13	
2632	J12	
2635	H14	
2636	E 4	
2639	E 3	
2640	E 3	
2641	E 2	
2642	F 2	
2643	F 2	
2644	E 2	
2645	E I	
2646	K I	
2648	J10	
2650	J12	
2651	G14	
2652	K 5	
2654	K 5	
3600	H 2	
3601	J11	
3602	J11	
3609	K 8	
3610	K 7	
3613	C12	
3614	C12	
3615	C12	
3616	C12	
3628	D10	
3633	C13	
3634	C13	
3635	C13	
3636	J12	
3637	J12	
3638	F14	
3642	G 5	
3643	G 5	
3644	G 5	
3645	H 5	
3646	E14	
3647	J 4	
3648	J 4	
3650	J10	
3655	J12	
3660	F15	
3661	K 6	
3662	K 7	
3666	D14	
3667	D14	
3668	H13	
3669	I13	
3840	B10	
3841	D10	
3842	B 9	
5600	E 4	
5602	E 2	
7600	K 2	
7601	F 9	
JE10	F 2	

POS: 7600 CAT24C16PI

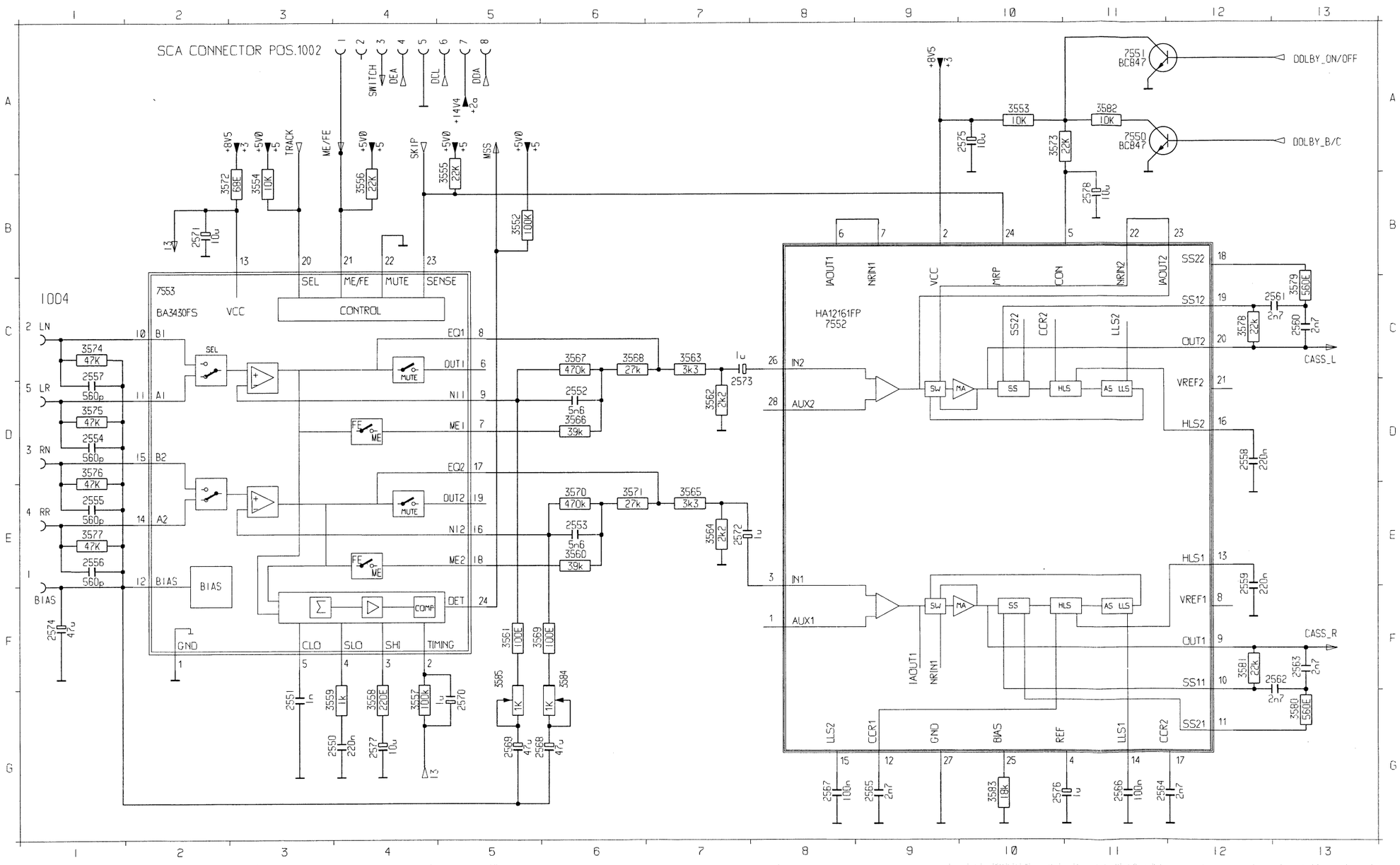
1-4: GND
5: 4,8 V (SDA)
6: 4,8 V (SCL)
7: GND
8: 4,9 V

POS. 7601 P83CE558EFB/059

1: GND
2: 4,9 V
3: GND
4: 4,9 V
5: GND
6: 5,3V / 0,6V (TEL. MUTE)
7: 3,3 V
8: 4,9 V
9: 4,3 V
10: 4,4 V
11: 1,6 V (LEVEL DEP.)
12: 0,0 V
13: GND
14: 4,9 V
15: GND
16: NC
17: 0,0 V / HIGH WHEN BLEEP
18-20: 0,0 V
21: nc
22: 4,9 V
23: nc
24: 4,9 V
25-27: nc
28: 4,9 V
29: GND
30: 0,0
31-34: 4,9 V
35: 4,5 V
36-38: 4,9 V
39: 4,8 V (SCL)
40: 4,8 V (SDA)
41: ca. 2 V
42: 2,8 V (REV) / 0,0 V (NOR)
43: 2,4 V
44: 4,9 V
45: 0,0 V / 3,6 V (MSS, WIND)
46: 4,9 V / 0,0 V (CASS. MODE)
47: 4,6 V / 0,0 V (DOLBY C)
48: 4,2 V / 0,0 V (DOLBY ON)
49-51: nc
52: 2,6 V (11MHZ)
53: 4,9 V
54: 0,0 V
55-63: 4,9 V
64: 0,0 V
65, 66: 4,9 V
67: GND
68: 0,0 V
69-71: nc
72, 73: 5,1 V
74: 5,0 V / 0,2 V (CASS. MODE)
75: 0,0 V
76: 4,9 V
77: GND
78: nc
79: GND
80: 4,9 V

PREAMPLIFIER/MSS/DOLBY (only 22 DC 786)

1004	C 1	2555	E 1	2561	C13	2567	G 8	2573	C 7	3552	B 5	3558	G 4	3564	E 7	3570	E 6	3576	D 1	3582	A11	7552	C 8
2550	G 4	2556	E 1	2562	F13	2568	G 6	2574	F 1	3553	A10	3559	G 3	3565	E 7	3571	E 6	3577	E 1	3583	G10	7553	C 2
2551	G 3	2557	C 1	2563	F13	2569	G 5	2575	A10	3554	B 3	3560	E 6	3566	D 6	3572	B 2	3578	C12	3584	F 6		
2552	D 6	2558	D12	2564	G11	2570	G 5	2576	G10	3555	A 5	3561	F 5	3567	C 6	3573	A10	3579	C13	3585	F 5		
2553	E 6	2559	E12	2565	G 9	2571	B 2	2577	G 4	3556	B 4	3562	D 7	3568	C 6	3574	C 1	3580	G13	7550	A11		
2554	D 1	2560	C13	2566	G11	2572	E 7	2578	B11	3557	G 4	3563	C 7	3569	F 5	3575	D 1	3581	F12	7551	A11		



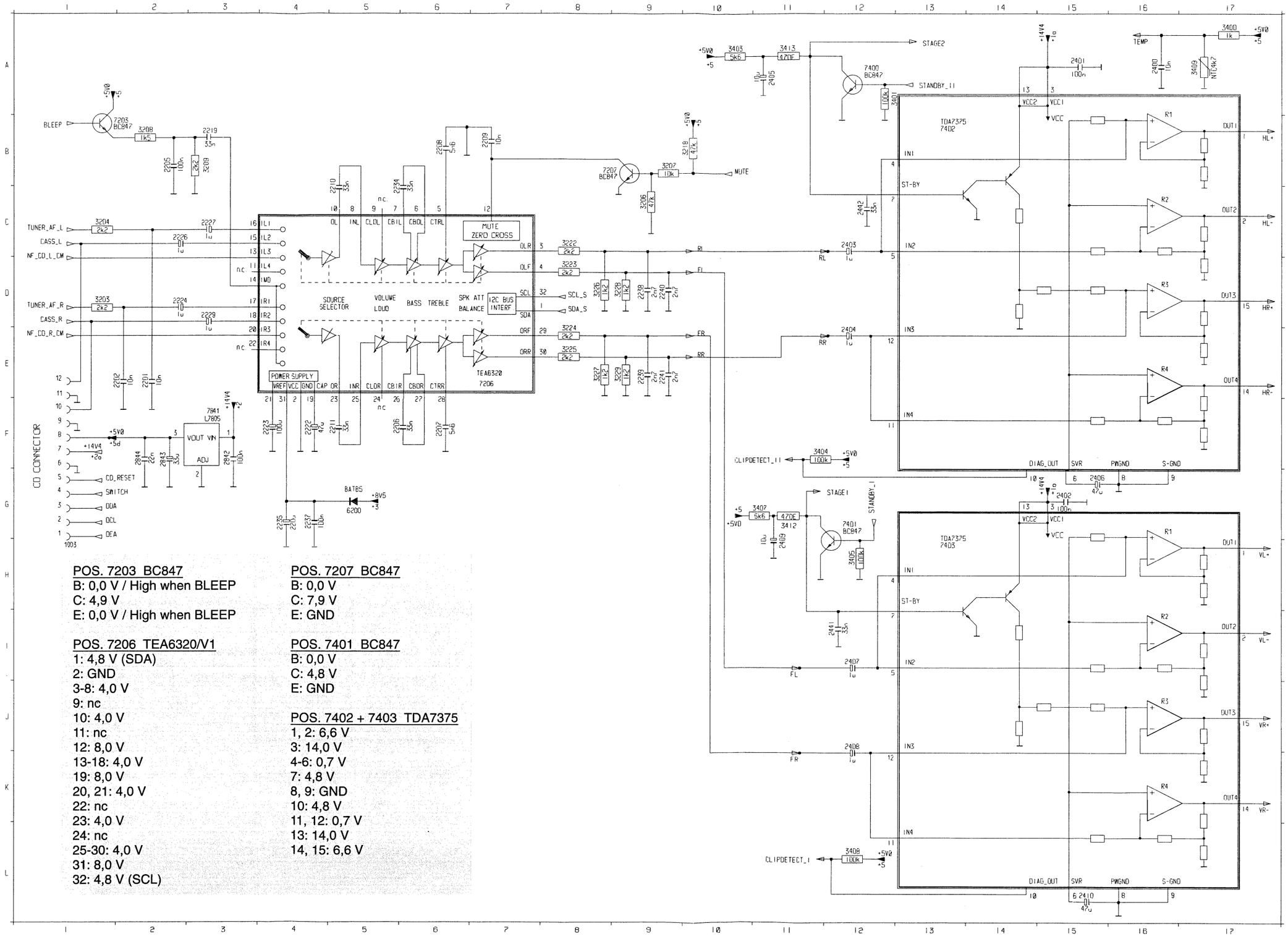
POS. 7550 BC847 (ONLY 786)
B: 0,6 V / 0,0 V (DOLBY C)
C: 0,0 V / 7,2 V (DOLBY C)
E: GND

POS. 7551 BC847 (ONLY 786)
B: 0,6 V / 0,0 V (DOLBY ON)
C: 0,0 V / 4,0 V (DOLBY B) / 7,2 V (DOLBY C)
E: GND

POS. 7552 HA12161FP (ONLY 786)
1: nc
2: 8,5 V
3: 4,1 V
4: 4,0 V
5: 0,1 V / 3,9 V (DOLBY B) / 6,2 V (DOLBY C)
6, 7: 4,1 V
8: nc
9-12: 4,1 V
13-16: 1,9 V
17-20: 4,1 V
21: nc
22, 23: 4,1 V
24: 0,0 V / 3,6 V (MSS, WIND)
25: 0,2 V
26: 4,1 V
27: GND
28: nc

POS. 7553 BA3430FS (ONLY 786)
1: GND
2: 7,3 V / 1,7 V (CASS.MODE)
3-5: 3,3 V
6: nc
7-12: 3,3 V
13: 7,6 V
14-18: 3,3 V
19: nc
20: 2,7 V (NOR) / 0,1 V (REV)
21: 4,3 V (ME) / 0,0 V (FE)
22: GND
23: 0,0 V / 3,6 V (MSS, WIND)
24: 4,9 V / 0,0 V (CASS. MODE)

AUDIO CONTROL / AF POWER STAGE



POS. 7203 BC847
B: 0,0 V / High when BLEEP
C: 4,9 V
E: 0,0 V / High when BLEEP

POS. 7206 TEA6320/V1
1: 4,8 V (SDA)
2: GND
3-8: 4,0 V
9: nc
10: 4,0 V
11: nc
12: 8,0 V
13-18: 4,0 V
19: 8,0 V
20, 21: 4,0 V
22: nc
23: 4,0 V
24: nc
25-30: 4,0 V
31: 8,0 V
32: 4,8 V (SCL)

POS. 7207 BC847
B: 0,0 V
C: 7,9 V
E: GND

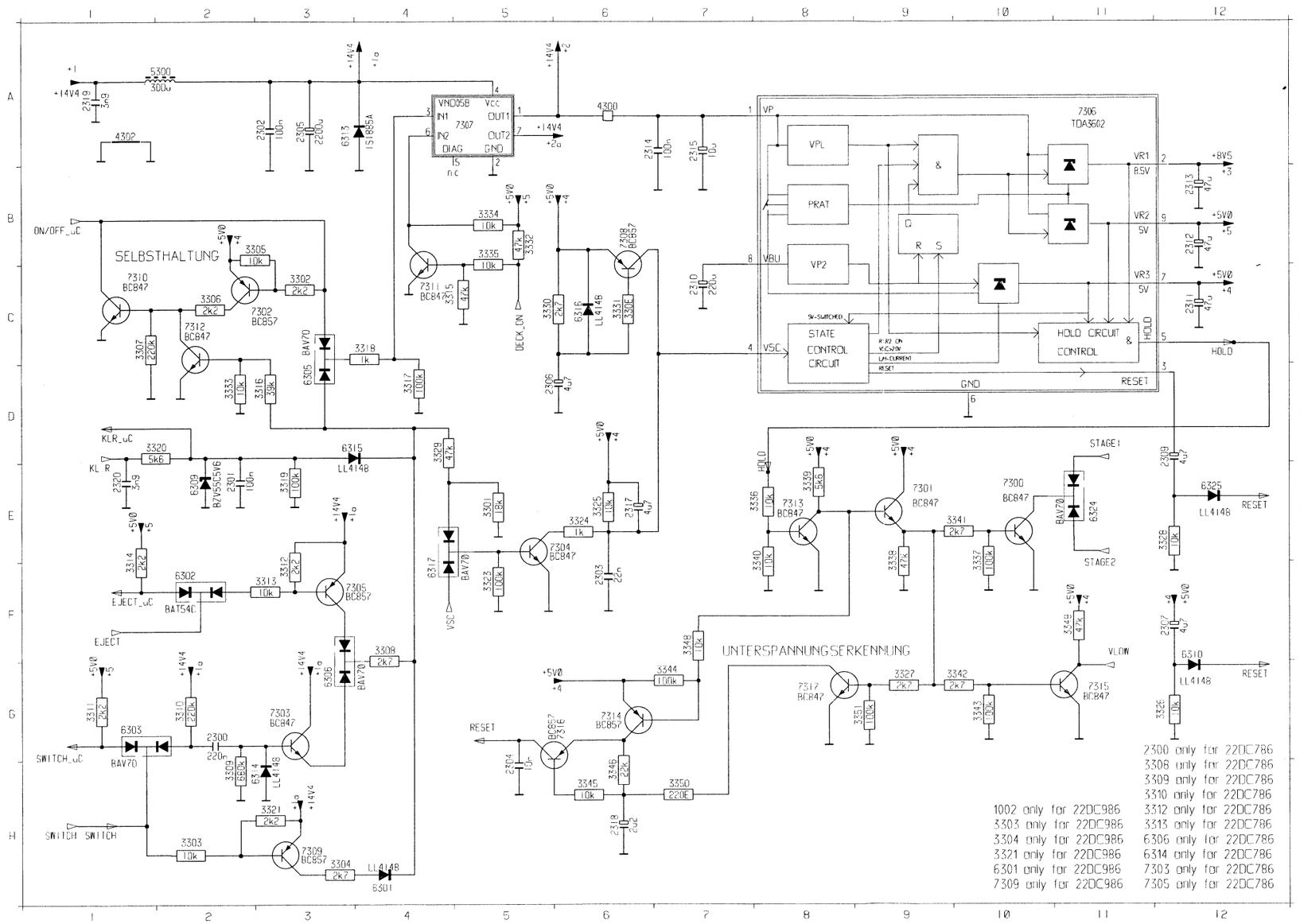
POS. 7401 BC847
B: 0,0 V
C: 4,8 V
E: GND

POS. 7402 + 7403 TDA7375
1, 2: 6,6 V
3: 14,0 V
4-6: 0,7 V
7: 4,8 V
8, 9: GND
10: 4,8 V
11, 12: 0,7 V
13: 14,0 V
14, 15: 6,6 V

1003 H 1
2201 E 2
2202 E 2
2205 B 2
2206 F 5
2207 F 6
2208 B 6
2209 B 7
2210 C 5
2211 F 5
2219 B 3
2222 F 4
2223 F 4
2224 D 2
2226 C 2
2227 C 3
2229 D 3
2234 C 5
2235 G 4
2237 G 4
2238 D 9
2239 E 9
2240 D 9
2241 E 9
2400 A16
2401 A15
2402 G15
2403 C12
2404 E12
2405 A11
2406 G15
2407 I12
2408 J12
2409 H11
2410 L15
2441 I12
2442 C12
2842 F 3
2843 F 2
2844 F 2
3203 D 1
3204 C 1
3206 C 9
3207 B 9
3208 B 2
3209 B 3
3218 B10
3222 C 8
3223 D 8
3224 E 8
3225 E 8
3226 D 8
3227 E 8
3228 D 9
3229 E 9
3400 A17
3401 A12
3403 A10
3404 F11
3405 H12
3407 G11
3408 L12
3409 A17
3412 G11
3413 A11
6200 G 5
7203 B 1
7206 E 7
7207 B 9
7400 A12
7401 G12
7402 B13
7403 H13
7841 F 3

ON/OFF LOGIC / POWER SUPPLY

2300 G 2	2311 C12	3302 C 3	3312 F 3	3323 F 5	3333 D 2	3343 G10	5300 A 2	6315 D 3	7305 F 3	7315 G11
2301 E 2	2312 B12	3303 H 2	3313 F 3	3324 E 6	3334 B 5	3344 G 7	6301 H 4	6316 C 6	7306 A11	7316 G 6
2302 A 3	2313 B12	3304 H 3	3314 E 1	3325 E 6	3335 B 5	3345 H 6	6302 F 2	6317 F 4	7307 A 5	7317 G 8
2303 F 6	2314 A 6	3305 B 3	3315 C 4	3326 G11	3336 E 7	3346 H 6	6303 G 1	6324 E11	7308 B 6	
2304 H 5	2315 A 7	3306 C 2	3316 D 3	3327 G 9	3337 E10	3348 F 7	6305 D 3	6325 E12	7309 H 3	
2305 A 3	2317 E 6	3307 C 1	3317 D 4	3328 E12	3338 E 9	3349 F11	6306 G 3	7300 E10	7310 C 1	
2306 D 5	2318 H 6	3308 F 4	3318 C 4	3329 D 4	3339 E 8	3350 H 7	6309 E 2	7301 E 9	7311 C 4	
2307 F12	2319 A 1	3309 H 2	3319 E 3	3330 C 5	3340 E 8	3351 G 9	6310 F12	7302 C 3	7312 C 2	
2309 D12	2320 E 1	3310 G 2	3320 D 2	3331 C 6	3341 F10	4300 A 6	6313 A 3	7303 G 3	7313 E 8	
2310 C 7	3301 E 5	3311 G 1	3321 H 3	3332 B 5	3342 G10	4302 A 1	6314 H 3	7304 E 5	7314 G 6	



POS. 7300 BC847
B: 0,0 V
C: 4,7 V
E: GND

POS. 7301 BC847
B: 0,0 V
C: 5,0 V
E: 0,0 V

POS. 7302 BC847
B: 4,7 V
C: 0,0 V
E: 4,9 V

POS. 7303 BC847 (ONLY 786)
B: 0,0 V
C: 14,0 V
E: 0,2 V

POS. 7304 BC847
B: 0,6 V
C: 0,0 V
E: GND

POS. 7305 BC847
B: 14,0 V
C: 0,2 V / 14,0 V
(EJECT BUTTON PRESSED)
E: 14,0 V

POS. 7306 TDA3602/N3
1: 14,0 V
2: 8,4 V
3: 4,8 V
4: 0,5 V
5: 4,8 V
6: GND
7: 4,9 V
8: 13,0 V
9: 4,9 V

POS. 7307 VND053
1: 14,0 V
2: GND
3: 4,2 V
4: 14,0 V
5: nc
6: 4,6 V
7: 14,0 V

POS. 7308 BC857
B: 4,9 V
C: 0,5 V
E: 4,9 V

POS. 7309 BC857 (ONLY 986)
B: 14,0 V
C: 0,1 V
E: 14,0 V

POS. 7310 BC857
B: 0,0 V
C: 4,7 V
E: GND

POS. 7311 BC847
B: 0,0 V
C: 4,6 V
E: GND

POS. 7312 BC847
B: 0,6 V
C: 0,0 V
E: GND

POS. 7313 BC847
B: 0,7 V
C: 0,0 V
E: GND

POS. 7314 BC857
B: 4,2 V
C: 4,9 V
E: 4,9 V

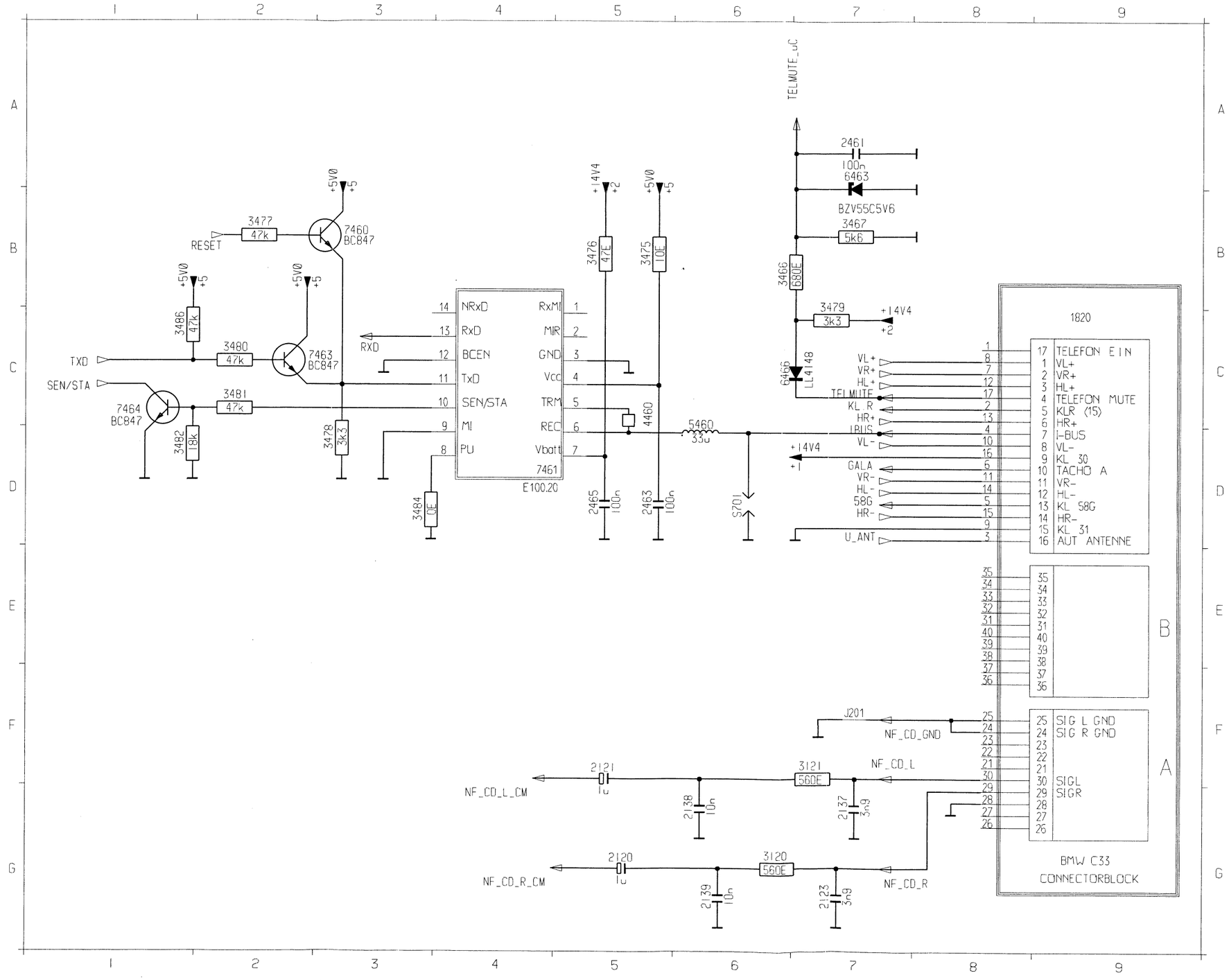
POS. 7315 BC847
B: 0,0 V
C: 4,6 V
E: GND

POS. 7316 BC857
B: 4,9 V
C: 0,0 V
E: 4,9 V

POS. 7317 BC847
B: 0,0 V
C: 4,9 V
E: GND

CONNECTOR BLOCK / I-BUS

1820	C 9	2137	G 7	2463	D 5	3466	B 6	3477	B 2	3481	C 2	4460	C 5	7460	B 3	J201	F 7
2120	G 5	2138	G 6	2465	D 5	3467	B 7	3478	D 3	3482	D 1	5460	D 6	7461	D 5	S701	D 6
2121	F 5	2139	G 6	3120	G 6	3475	B 5	3479	C 7	3484	D 3	6463	A 7	7463	C 2		
2123	G 7	2461	A 7	3121	F 7	3476	B 5	3480	C 2	3486	C 1	6466	C 6	7464	C 1		



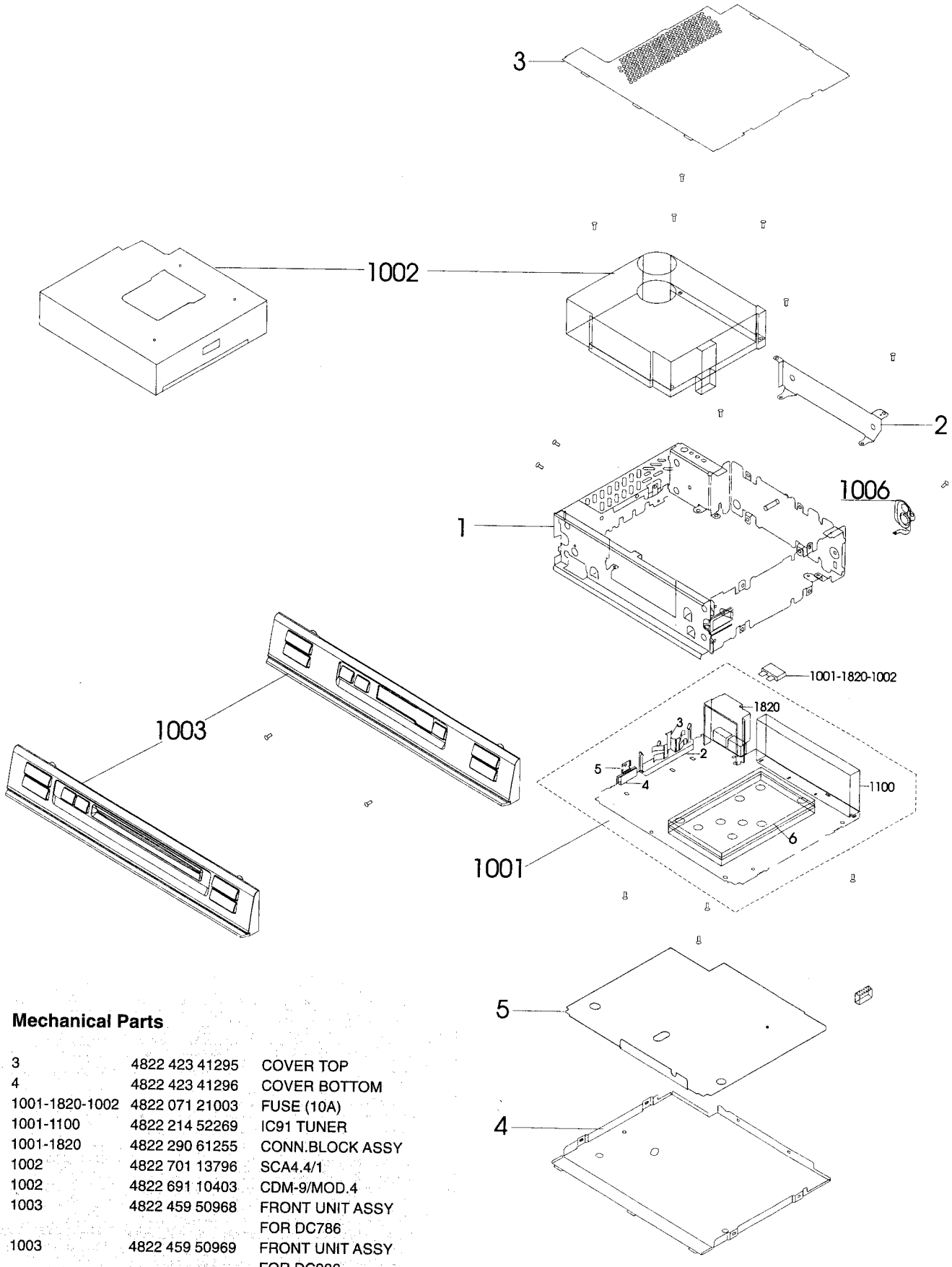
POS. 7460 BC847
B: 0,0 V
C: 4,9 V
E: 4,2 V

POS. 7461 E100.20
1, 2: nc
3: GND
4: 4,8 V
5-7: 14,0 V
8, 9: GND
10: 0,0 V
11: 4,2 V
12: GND
13: 4,9 V
14: nc

POS. 7463 BC847
B: 4,8 V
C: 4,9 V
E: 4,2 V

POS. 7464 BC847
B: 0,0 V
C: 4,9 V
E: GND

EXPLODED VIEW



Mechanical Parts

3	4822 423 41295	COVER TOP
4	4822 423 41296	COVER BOTTOM
1001-1820-1002	4822 071 21003	FUSE (10A)
1001-1100	4822 214 52269	IC91 TUNER
1001-1820	4822 290 61255	CONN.BLOCK ASSY
1002	4822 701 13796	SCA4.4/1
1002	4822 691 10403	CDM-9/MOD.4
1003	4822 459 50968	FRONT UNIT ASSY FOR DC786
1003	4822 459 50969	FRONT UNIT ASSY FOR DC986
1006	4822 267 31702	AERIAL SOCKET

ELECTRICAL PARTSLIST

For all capacitors, resistors and coils not mentioned here, refer to standard component catalogue.
Service code is 4822 736 53404

Miscelleaneous

1003	5322 267 50969	CONNECTOR	FOR CDM9	
1500	4822 267 31815	CONNECTOR	1P	
1700	4822 242 81646	CRYSTAL	11.059 MHZ	
1800	4822 242 72195	CRYSTAL	4.332 MHZ	

Capacitors

2120	4822 124 23282	CAP.ELECTROLYT.	1UF20%	50V
2121	4822 124 23282	CAP.ELECTROLYT.	1UF20%	50V
2206	4822 122 33342	CAP.CHIP	33NF10%X7R	63V
2208	4822 122 32646	CAP.CERAMIC	5,6NF10%X7R	50V
2210	4822 122 33342	CAP.CHIP	33NF10%X7R	63V
2211	4822 122 33342	CAP.CHIP	33NF10%X7R	63V
2219	4822 122 33342	CAP.CHIP	33NF10%X7R	63V
2222	4822 124 22646	CAP.ELECTROLYT.	47UF20%	16V
2223	4822 124 80453	CAP.ELECTROLYT.	100UF20%	10V
2224	4822 124 23282	CAP.ELECTROLYT.	1UF20%	50V
2225	4822 124 23282	CAP.ELECTROLYT.	1UF20%	50V
2226	4822 124 23282	CAP.ELECTROLYT.	1UF20%	50V
2227	4822 124 23282	CAP.ELECTROLYT.	1UF20%	50V
2228	4822 124 23282	CAP.ELECTROLYT.	1UF20%	50V
2229	4822 124 23282	CAP.ELECTROLYT.	1UF20%	50V
2234	4822 122 33342	CAP.CHIP	33NF10%X7R	63V
2235	4822 124 41097	CAP.ELECTROLYT.	220UF 20%	16V
2300	4822 122 32916	CAP.CHIP	220NF10%X7R	63V
2305	4822 124 80769	CAP.ELECTROLYT.	2200UF20%	16V
2306	4822 124 80727	CAP.ELECTROLYT.	4.7UF20%	25V
2307	4822 124 80727	CAP.ELECTROLYT.	4.7UF20%	25V
2309	4822 124 80727	CAP.ELECTROLYT.	4.7UF20%	25V
2310	4822 124 41097	CAP.ELECTROLYT.	220UF 20%	16V
2311	4822 124 80724	CAP.ELECTROLYT.	47UF20%	10V
2312	4822 124 80724	CAP.ELECTROLYT.	47UF20%	10V
2313	4822 124 80724	CAP.ELECTROLYT.	47UF20%	10V
2315	4822 124 80813	CAP.ELECTROLYT.	10UF20%	16V
2317	4822 124 80727	CAP.ELECTROLYT.	4.7UF20%	25V
2318	4822 124 80726	CAP.ELECTROLYT.	2.2UF20%	50V
2403	4822 124 80725	CAP.ELECTROLYT.	1UF20%	50V
2404	4822 124 80725	CAP.ELECTROLYT.	1UF20%	50V
2405	4822 124 80813	CAP.ELECTROLYT.	10UF20%	16V
2406	4822 124 80724	CAP.ELECTROLYT.	47UF20%	10V
2407	4822 124 80725	CAP.ELECTROLYT.	1UF20%	50V
2408	4822 124 80725	CAP.ELECTROLYT.	1UF20%	50V
2409	4822 124 80813	CAP.ELECTROLYT.	10UF20%	16V
2410	4822 124 80724	CAP.ELECTROLYT.	47UF20%	10V
2420	4822 124 41017	CAP.ELECTROLYT.	10UF	16V
2421	4822 124 80765	CAP.ELECTROLYT.	4.7UF20%	35V
2422	4822 124 23504	CAP.ELECTROLYT.	2.2UF20%	50V
2423	4822 124 23504	CAP.ELECTROLYT.	2.2UF20%	50V
2424	4822 124 22646	CAP.ELECTROLYT.	47UF20%	16V
2429	5322 122 33538	CAP.CHIP	150PF 2%NP0	63V
2430	5322 122 33538	CAP.CHIP	150PF 2%NP0	63V
2431	5322 122 33538	CAP.CHIP	150PF 2%NP0	63V
2432	5322 122 33538	CAP.CHIP	150PF 2%NP0	63V
2436	4822 122 33806	CAP.CHIP	820PF10%X7R	63V
2439	5322 122 32448	CAP.CERAMIC	10PF 5%	50V
2441	4822 122 33342	CAP.CHIP	33NF10%X7R	63V
2442	4822 122 33342	CAP.CHIP	33NF10%X7R	63V
2502	4822 124 80109	CAP.ELECTROLYT.	0.22UF20%	50V
2504	4822 124 23282	CAP.ELECTROLYT.	1UF20%	50V
2550	4822 122 32916	CAP.CHIP	20NF10%X7R	63V
2558	4822 122 32916	CAP.CHIP	220NF10%X7R	63V
2559	4822 122 32916	CAP.CHIP	220NF10%X7R	63V
2568	4822 124 22646	CAP.ELECTROLYT.	47UF20%	16V
2569	4822 124 22646	CAP.ELECTROLYT.	47UF20%	16V
2570	4822 124 23282	CAP.ELECTROLYT.	1UF20%	50V
2571	4822 124 41017	CAP.ELECTROLYT.	10UF	16V
2572	4822 124 23282	CAP.ELECTROLYT.	1UF20%	50V
2573	4822 124 23282	CAP.ELECTROLYT.	1UF20%	50V
2574	4822 124 22646	CAP.ELECTROLYT.	47UF20%	16V
2575	4822 124 41017	CAP.ELECTROLYT.	10UF	16V
2576	4822 124 23282	CAP.ELECTROLYT.	1UF20%	50V
2577	4822 124 41017	CAP.ELECTROLYT.	10UF	16V
2578	4822 124 41017	CAP.ELECTROLYT.	10UF	16V
2643	4822 122 33342	CAP.CHIP	33NF10%X7R	63V
2645	4822 122 33342	CAP.CHIP	33NF10%X7R	63V
2656	4822 122 33178	CAP.CHIP	1NF 20% X7	R 50V
2719	5322 122 32448	CAP.CERAMIC	10PF 5%	50V
2800	4822 124 23504	CAP.ELECTROLYT.	2.2UF20%	50V
2801	4822 124 41017	CAP.ELECTROLYT.	10UF	16V
2802	4822 124 23504	CAP.ELECTROLYT.	2.2UF20%	50V
2804	5322 122 31946	CAP.CHIP	27PF 5%NP0	63V
2805	5322 122 32452	CAP.CERAMIC	47PF 5%NP0	63V
2843	4822 124 23281	CAP.ELECTROLYT.	33UF20%	16V

Resistors

3409	4822 116 30426	RES.N.T.C.	4K7 3%	0.1W
3444	4822 100 12071	POTM.	EVNDXAA03B25	
3584	4822 100 11681	MODULE	1K 30%	0 ,1W
3585	4822 100 11681	MODULE	1K 30%	0 ,1W

Coils

5460	4822 152 20678	COIL	33UH
5600	4822 157 53575	COIL	3.3 UH
5602	4822 157 71387	COIL	100MHZ
5700	4822 157 53575	COIL	3.3 UH
5800	4822 152 20678	COIL	33UH

Diodes

6200	4822 130 31983	DIODE	BAT85
6301	4822 130 83338	DIODE,CHIP	LL4148
6302	4822 130 82594	DIODE,CHIP	BAT54C
6303	5322 130 34331	DIODE,CHIP	BAV70
6305	5322 130 34331	DIODE,CHIP	BAV70
6306	5322 130 34331	DIODE,CHIP	BAV70
6309	4822 130 80954	DIODE,REFERENCE	BZV55-C5V6
6310	4822 130 83338	DIODE,CHIP	LL4148
6313	4822 130 80751	DIODE	1S1885A
6313	4822 130 82465	DIODE	1.5KE27P
6314	4822 130 83338	DIODE,CHIP	LL4148
6315	4822 130 83338	DIODE,CHIP	LL4148
6316	4822 130 83338	DIODE,CHIP	LL4148
6317	5322 130 34331	DIODE,CHIP	BAV70
6324	5322 130 34331	DIODE,CHIP	BAV70
6325	4822 130 83338	DIODE,CHIP	LL4148
6420	5322 130 34337	DIODE,CHIP	BAV99
6421	5322 130 34337	DIODE,CHIP	BAV99
6463	4822 130 80954	DIODE,REFERENCE	BZV55-C5V6
6466	4822 130 83338	DIODE,CHIP	LL4148
6501	4822 130 81196	RECTIFIER	S5566B
6502	4822 130 80954	DIODE,REFERENCE	BZV55-C5V6
6503	4822 130 80954	DIODE,REFERENCE	BZV55-C5V6
6504	4822 130 81196	RECTIFIER	S5566B
6507	5322 130 34331	DIODE,CHIP	BAV70

Transistors and IC's

7100	4822 130 42131	TRANSISTOR,CHIP	BF550
7203	4822 130 42705	TRANSISTOR,CHIP	BC847
7206	4822 209 32745	INTEGR.CIRCUIT	TEA6320/V1
7207	4822 130 42705	TRANSISTOR,CHIP	BC847
7300	4822 130 42705	TRANSISTOR,CHIP	BC847
7301	4822 130 42705	TRANSISTOR,CHIP	BC847
7302	4822 130 61233	TRANSISTOR,CHIP	BC857
7303	4822 130 42705	„TRANSISTOR;CHIP"	BC847
7304	4822 130 42705	TRANSISTOR,CHIP	BC847
7305	4822 130 61233	TRANSISTOR,CHIP	BC857
7306	4822 209 33029	INTEGR.CIRCUIT	TDA3602/N3
7307	4822 209 90757	INTEGR.CIRCUIT	VND05B
7308	4822 130 61233	TRANSISTOR,CHIP	BC857
7309	4822 130 61233	TRANSISTOR,CHIP	BC857
7310	4822 130 42705	TRANSISTOR,CHIP	BC847
7311	4822 130 42705	TRANSISTOR,CHIP	BC847
7312	4822 130 42705	TRANSISTOR,CHIP	BC847
7313	4822 130 42705	TRANSISTOR,CHIP	BC847
7314	4822 130 61233	TRANSISTOR,CHIP	BC857
7315	4822 130 42705	TRANSISTOR,CHIP	BC847
7316	4822 130 61233	TRANSISTOR,CHIP	BC857
7317	4822 130 42705	TRANSISTOR,CHIP	BC847
7400	4822 130 42705	TRANSISTOR,CHIP	BC847
7401	4822 130 42705	TRANSISTOR,CHIP	BC847
7402	4822 209 33629	INTEGR.CIRCUIT	TDA7375
7403	4822 209 33629	INTEGR.CIRCUIT	TDA7375
7420	4822 130 42705	TRANSISTOR,CHIP	BC847
7421	4822 209 32742	INTEGR.CIRCUIT	TL074IN
7425	4822 209 83159	INTEGR.CIRCUIT	LA2000
7460	4822 130 42705	TRANSISTOR,CHIP	BC847
7461	4822 209 33841	INTEGR.CIRCUIT	E100.20
7463	4822 130 42705	TRANSISTOR,CHIP	BC847
7464	4822 130 42705	TRANSISTOR,CHIP	BC847
7501	4822 130 42705	TRANSISTOR,CHIP	BC847
7502	4822 130 42132	TRANSISTOR,CHIP	BC807
7503	4822 130 61233	TRANSISTOR,CHIP	BC857
7504	4822 130 61233	TRANSISTOR,CHIP	BC857
7505	4822 130 40995	TRANSISTOR	BD438
7506	4822 130 42705	TRANSISTOR,CHIP	BC847
7507	4822 130 42705	TRANSISTOR,CHIP	BC847
7550	4822 130 42705	TRANSISTOR,CHIP	BC847
7551	4822 130 42705	TRANSISTOR,CHIP	BC847
7552	4822 209 33636	INTEGR.CIRCUIT	HA12161FP
7553	4822 209 33884	INTEGR.CIRCUIT	BA3430FS
7600	5322 209 12323	INTEGR.CIRCUIT	CAT24C16PI
7601	4822 209 90758	MICROPROCESSOR	P83CE558EFB)59
7601	4822 209 90759	MICROPROCESSOR	P83CE558EFB)58
7700	4822 130 42705	TRANSISTOR,CHIP	BC847
7702	4822 209 90762	MICROPROCESSOR	P83CE559EFB)15
7702	4822 209 90761	MICROPROCESSOR	P83CE559EFB)14
7703	4822 130 42705	TRANSISTOR,CHIP	BC847
7704	4822 130 42705	TRANSISTOR,CHIP	BC847
7800	4822 209 33842	INTEGR.CIRCUIT	TDA7330B
7841	4822 209 90567	INTEGR.CIRCUIT	L7805ABV

Car cassette deck SCA

Version 4.4

Service
Service
Service

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KiVi Service GmbH
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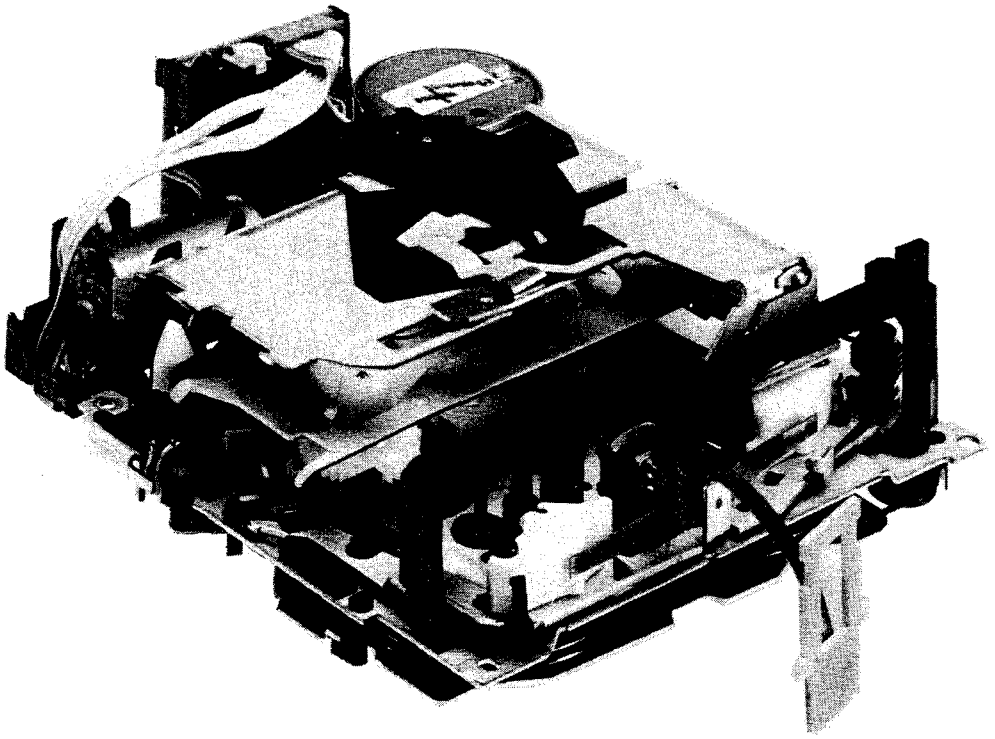
ServiceManual

12 V ⊖—|||



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MECHANICAL SPECIFICATION

Operating positions:	Any position from horizontal to 45° standing vertically on the rear side.
Operating temperature:	-20°C to +70°C
Tape speed:	4,76 cm/sec
Wow and flutter:	< 0,5% unweighted
	< 0,3% weighted
Winding time:	
Test tape: RCA 118 (C60)	< 110 sec
Eject and loading time:	< 2 sec

ELECTRICAL SPECIFICATION

Voltage:	min 10,6 V max 16,0 V
Current - playback:	200 mA
Current - fast wind:	150 mA
Current - eject, standby:	100 µA
Hold in voltage:	8,0 V
Capstan motor:	14,4 V
Servo motor:	2 V DC Play
	11,5 V DC Fast, Servo
Playback Crosstalk	
ch. 1 - 2 / 3 - 4	> 36 dB
ch. 2 - 3	> 46 dB

FEATURES

The SCA-4.4 tape deck is usable in several sets. Most of the control functions depend on the hard- and software-configuration of the set in which the deck is installed.
The set µC can control soft eject, emergency eject, standby mode, reverse function, MSS, ME/FE and DOLBY indication.
Some versions of the deck could be equipped with a groved head and/or a preamplifier circuit.

HANDLING AND DEMOUNTING INSTRUCTIONS

GENERAL

- Protect the tape deck against ESD !
- Plastic catches and snap connections must be released careful with screwdriver or tweezers.
- Cables must be laid in the defined cable guidings after mounting.
- For lubrication see indications in the exploded view.
- To clean tape transport and head only use moist cleaning tapes or piece of cloth, take care that no fluid (alcohol) drops into the bearing.
- For transport lift/carrier assy must be in eject position, do not carry the deck by touching the lift/carrier.
- Use a screwdriver 2,5 mm with insulated shaft for adjusting drift.
- Screw the deck into the set in order: Front right, front left, rear left, rear right.

DEMOUNTING

1. Carrier/lift (44)
1.1 Lift in eject position - put leg of eject spring (12) into mounting position acc. fig. 8 and fig. 2 - J
1.2 Lift in play position - unclamp cassette holder (49) from eject lever (48) with a left-upwards motion acc. fig.1-B
1.3 Lift in eject position - push plastic hook (fig.1-D) and pull out eject lever, remember position of ejector spring (55) and switching pin (54) for re-assembly later on
1.4 Release fixation lever (fig.1-F) by clicking out in left direction and then turn to the right
1.5 Lift in mid position - take out carrier and lift by releasing plastic hooks at the left (fig.1-G)

2. Head support
2.1 Take out carrier/lift according 1.
2.2 Remove head carrier spring (37)
2.3 Turn head support fixation lever acc. fig.3-A
2.4 Position pin of switching lever (20) to max. left point, see fig.3-detail I
2.5 Release plastic snapper (fig.3-H) and take out head support assembly
!!! TAKE CARE NOT TO BENT THE HEAD CARRIER !!!
2.6 Press plastic fixation (fig.3-detail E,F) and take out magnetic head
2.7 Push pressure spring (27) acc. fig.3-D and move it out
2.8 Release plastic hooks (fig.3-B,C) to pull pinch rollers (45+68) out
2.9 Take off anchor spring (13), rotate anchor (2) 90°degrees to take it out (fig.4-A,B,C)

3. Capstan motor (32)
Remove belt (30) from driving wheel, desolder connection cables, unscrew the two torx screws at the bottom of chassis and take out capstan motor
!!! TAKE CARE OF CORRECT AND UNTWISTED MOUNTING OF THE BELT !!!

4. Servo motor (14)
Desolder connection cables and lever up motor out of its clamps (fig.2-F,G)

5. Clutch assy (57-59)
5.1 Remove servo motor acc. 4.
5.2 Cut disk (65) and remove it (must be renewed)
5.3 Pull clutch from the axle (fig.2-H,I)

6. Anchor holder (8) and magnet double (1)
6.1 Desolder cables of magnet
6.2 Swivel anchor holder counter-clockwise and press it off applying force near the pivoting point
6.3 Release plastic clamps of magnet holder and press magnet out from top of the chassis (fig.4-E)

7. Driving belt (30), flywheels (23) and bearings (70)
7.1 Release pivot plate (35) by turning the plastic hooks acc.fig.5-A,B
7.2 Remove pivot plate and driving belt
7.3 Pull out flywheels
7.4 Press bearings out of plastic housings from top side of chassis plate, use a plastic tool with diameter 4mm in order not to damage the housings
7.5 After mounting new flywheels, bearings or pivot plate you have to test wow and flutter because every deck is adjusted individual for these components. If the values of wow and flutter are out of specification, you have to exchange complete deck !
7.6 Degrease capstan axis after re-mounting the flywheels

8. Connection wheel (5), take up wheels (6), backtension springs (69)
8.1 Take out carrier/lift acc. 1.
8.2 Lever up connection wheel from axle (must be renewed)
8.3 Cut disks (65) and remove them (must be renewed)
8.4 Unclamp and pull up wheels with puller (fig.2-A,B)
8.5 Take out backtension springs

9. ME/CR Switch (60)
9.1 Desolder connection cables
9.2 Push with a small pin through the hole at the bottom of the chassis, directly under the switch

10. ON/OFF Switch (26)
10.1 Desolder connection cables
10.2 Lever up switch or push with a small pin through the hole at the bottom of the chassis, directly under the switch if servo motor and clutch were removed previously

11. Control pins (16), gear lever (17), play reverse lever (18)
11.1 Remove flywheels acc. 7
11.2 Remove play reverse lever
11.3 Put control pins into mounting position acc. fig.6-D,E
11.4 Take out gear lever
11.5 Pull out control pins

12. Switching lever (20), swivel wheel assembly (7,15,43)
12.1 Release spring (53) from black plastic pin
12.2 Turn switching lever acc. fig.7-A
12.3 Lever up switching lever from axle
12.4 Remove connection wheel acc. 8
12.5 Take out swivel wheel assembly

13. Switching pin (54), transport rod (25), latch (21)
13.1 Remove ON/OFF Switch acc. 10
13.2 Lever up switching pin from axle
13.3 Remove switching lever acc. 12
13.4 Move out transport rod and latch

TOOLS REQUIRED

Test cassette SBC 420	4822 397 30071
Test cassette SBC 419	4822 397 30069
Friction test cassette	4822 395 30054
Puller for clutch (fig.2)	4822 395 60039

ADJUSTMENTS

TORQUE OF REELS (FRICTION)

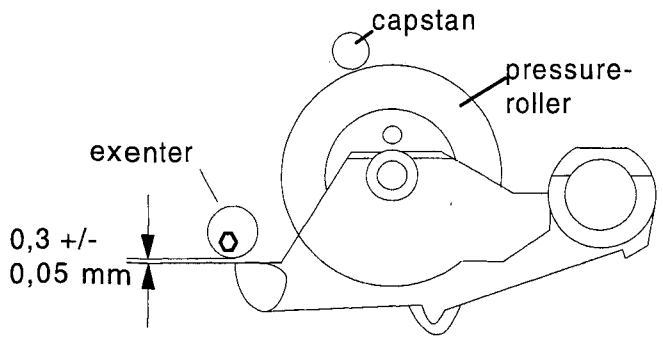
Adjust potmeter pos. 3409 until friction test cassette shows 9,5 +/- 1,5 mNm in NOR direction (after 2 minutes) and 8,5 +/- 1,5 mNm in REV direction. Backtension must be 0,3 to 0,7 mNm.
If values deviate check lubrication, clutch, take up wheels and backtension springs.

WOW AND FLUTTER, TAPE SPEED

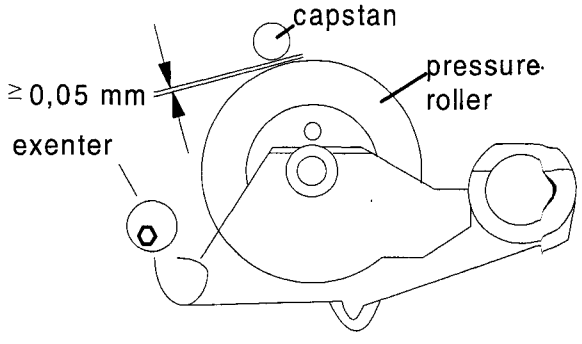
Connect wow and flutter meter to loudspeaker outputs and play the 3150 Hz signal track of test cassette SBC 420.
Value should be max. 0,5% (unweighted).
If value deviates check motors, pressure rollers, flywheels, belt, pulley and backtension springs.
Tape speed can be adjusted with motor potentiometer A (see fig.8). Use a screwdriver with insulated shaft !

PRESSURE ROLLER / CAPSTAN (see figures below)

Adjust clearance play-NOR position between pressure roller and stop head carrier



Adjust clearance FFW position between pressure roller and capstan



SCA-4.4

EJECTOR 48, HOLDER 49, LIFT 44

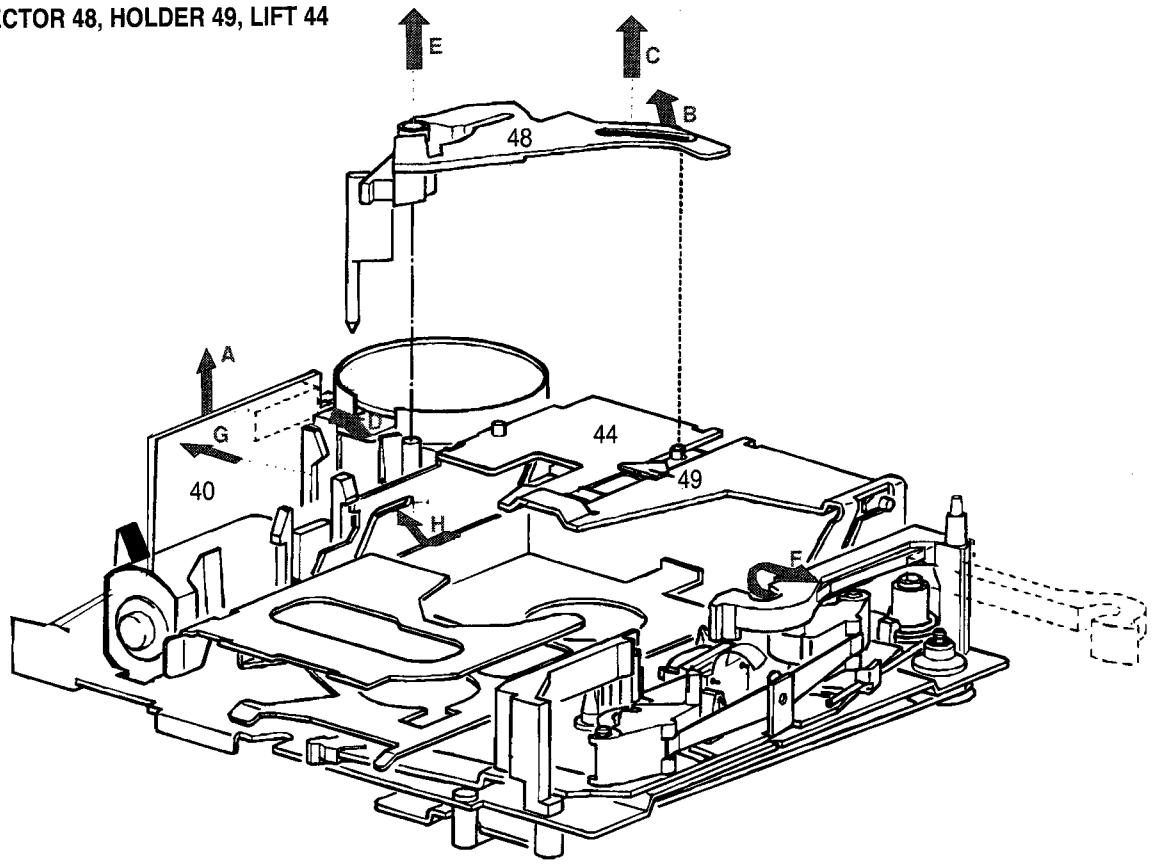


Fig. 1

CLUTCH 59, SWITCH 60, GEAR WHEEL 5, CARRIER 6

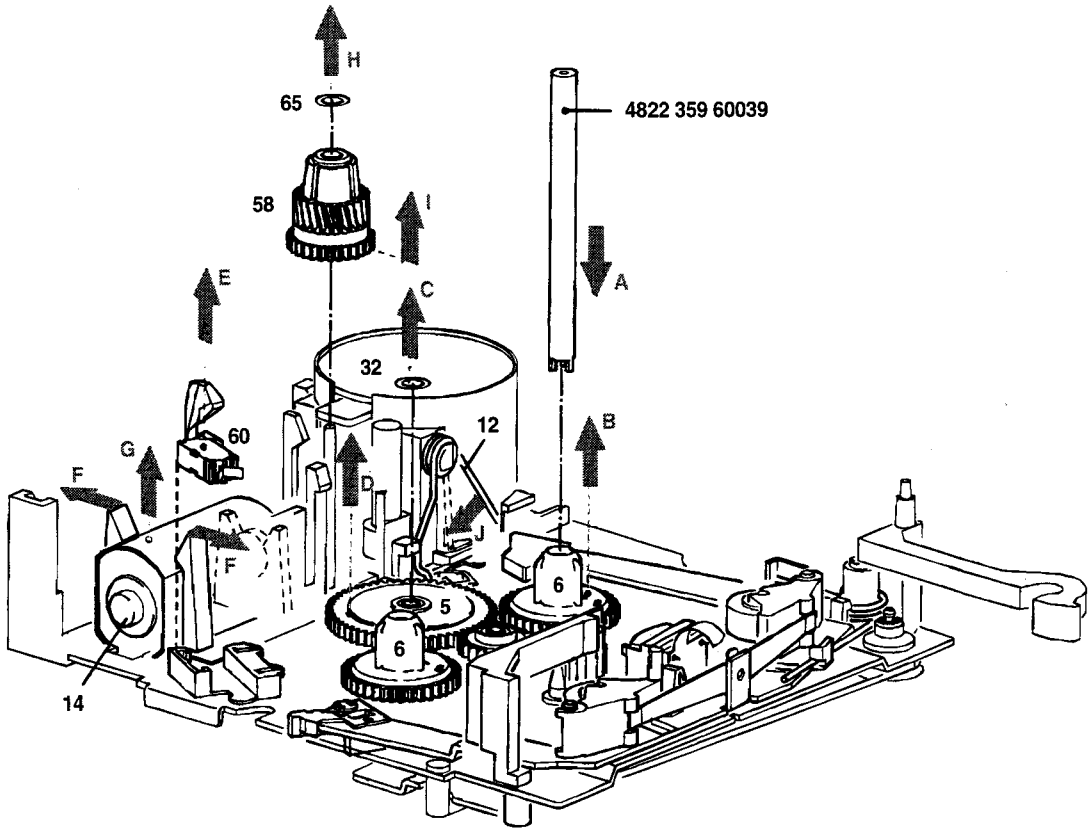


Fig. 2

PRESSURE ROLLER 45, HEAD BRACKET 33, HEAD 34

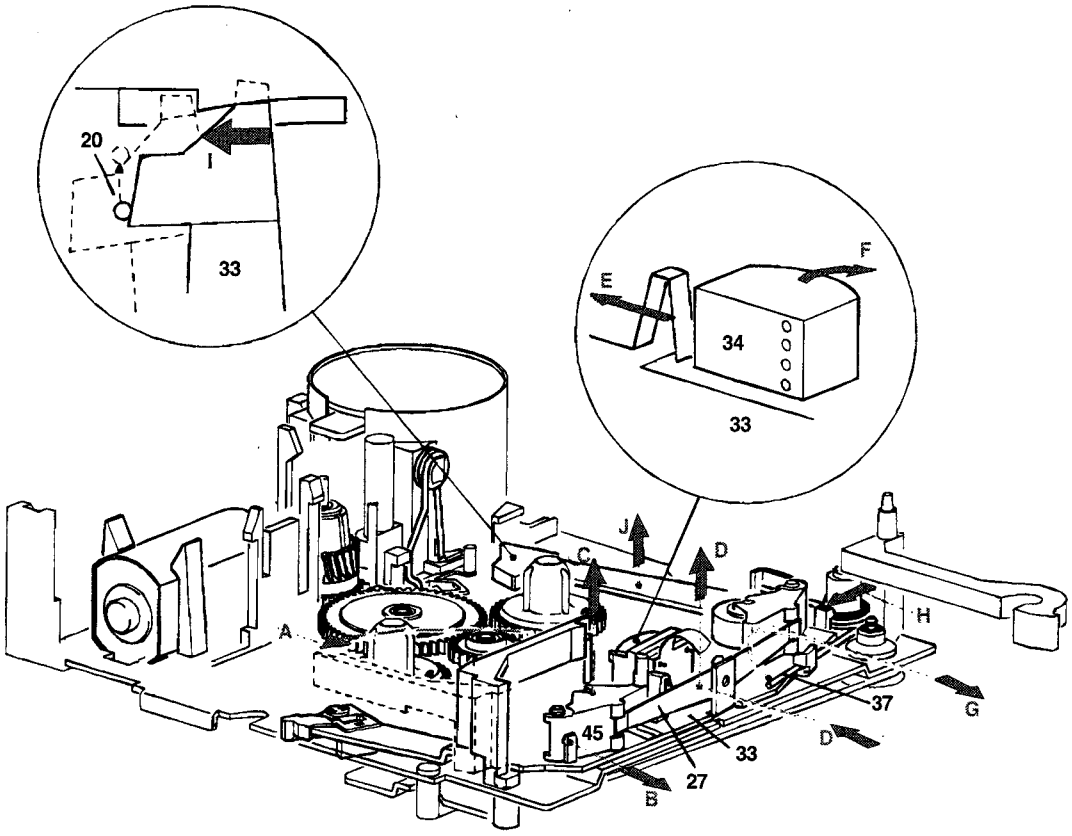


Fig. 3

ANCHOR 3/5, RELAY 1

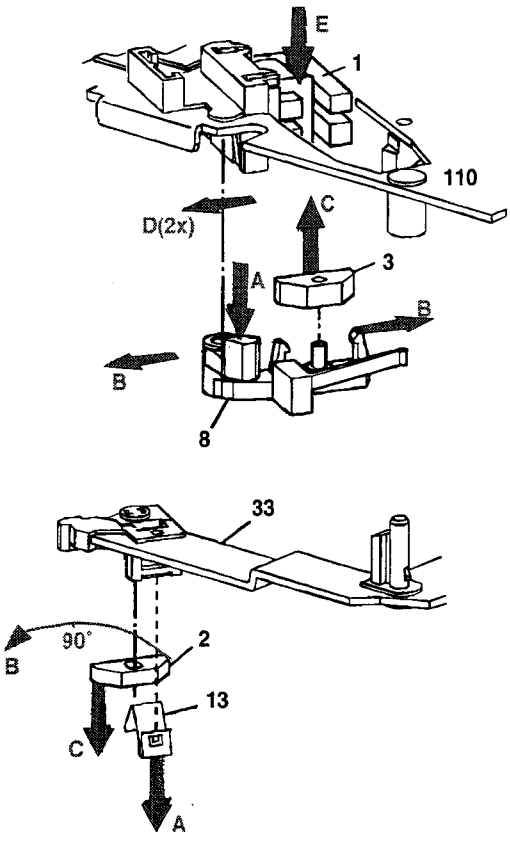


Fig. 4

FLYWHEEL 23, BELT 30

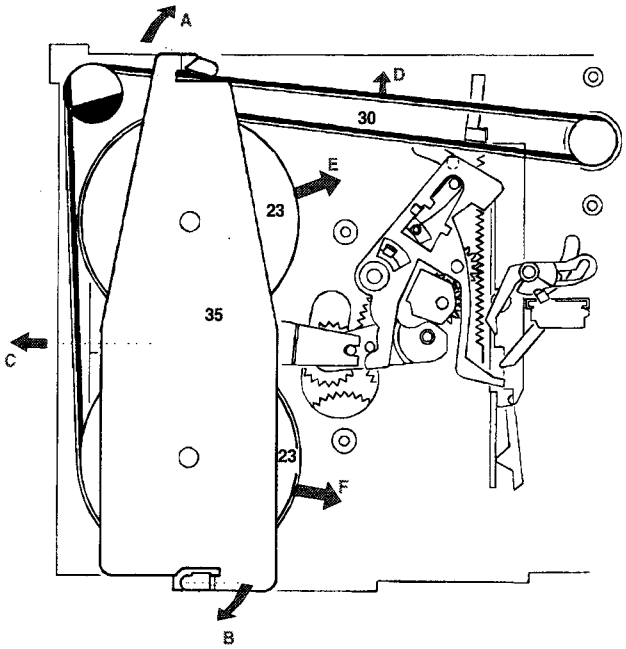


Fig. 5

SCA-4.4

PCS68 087

SEGMENT 16, BRACKET 17, BEARING 70

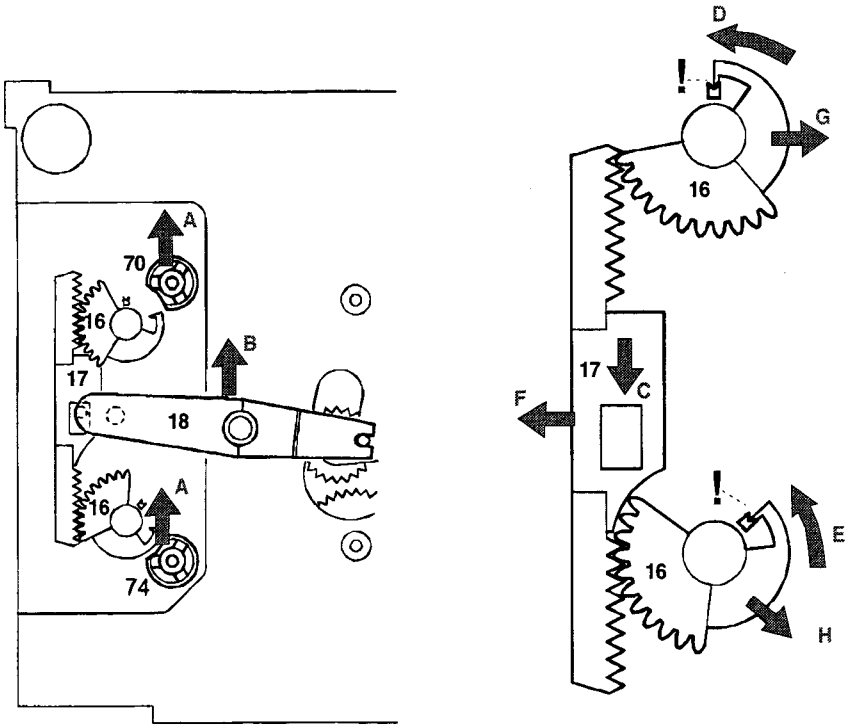


Fig. 6

SWITCH 26, SWIVEL GEAR 7, LEVER 20

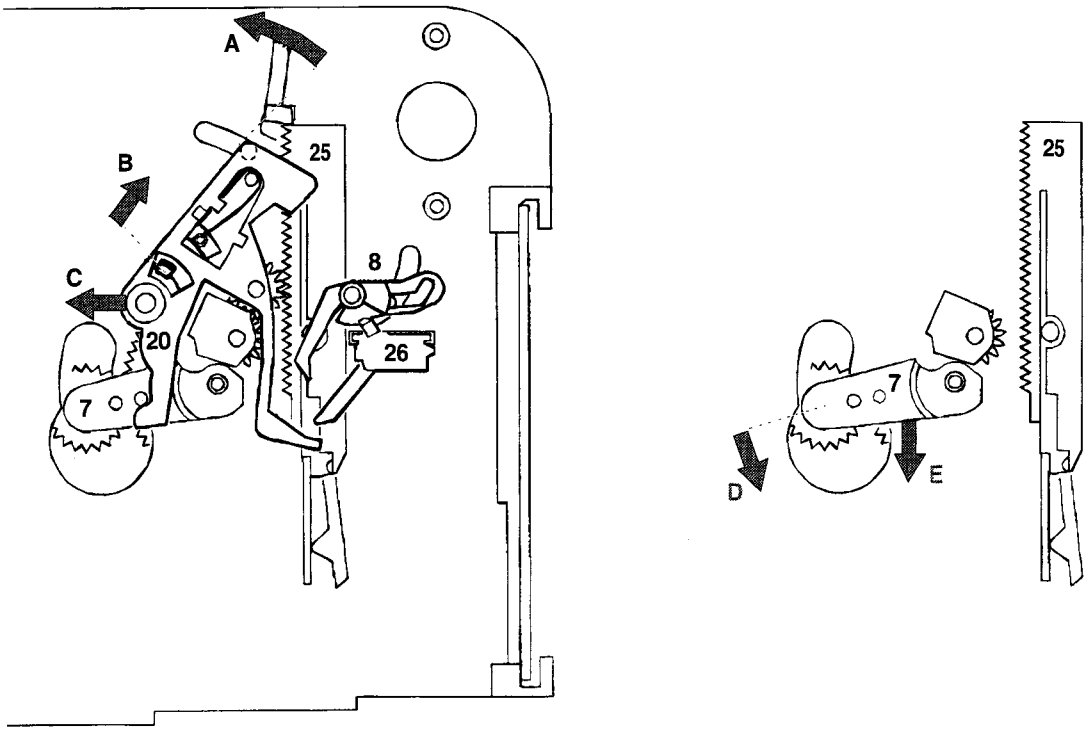


Fig. 7

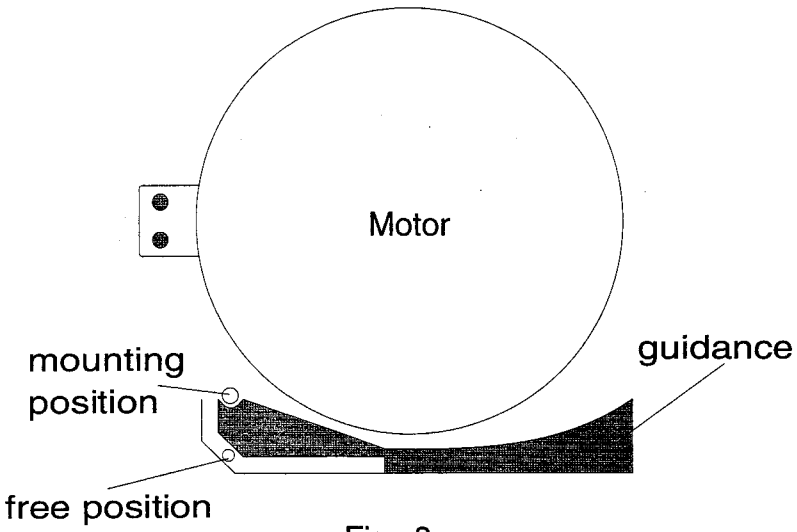
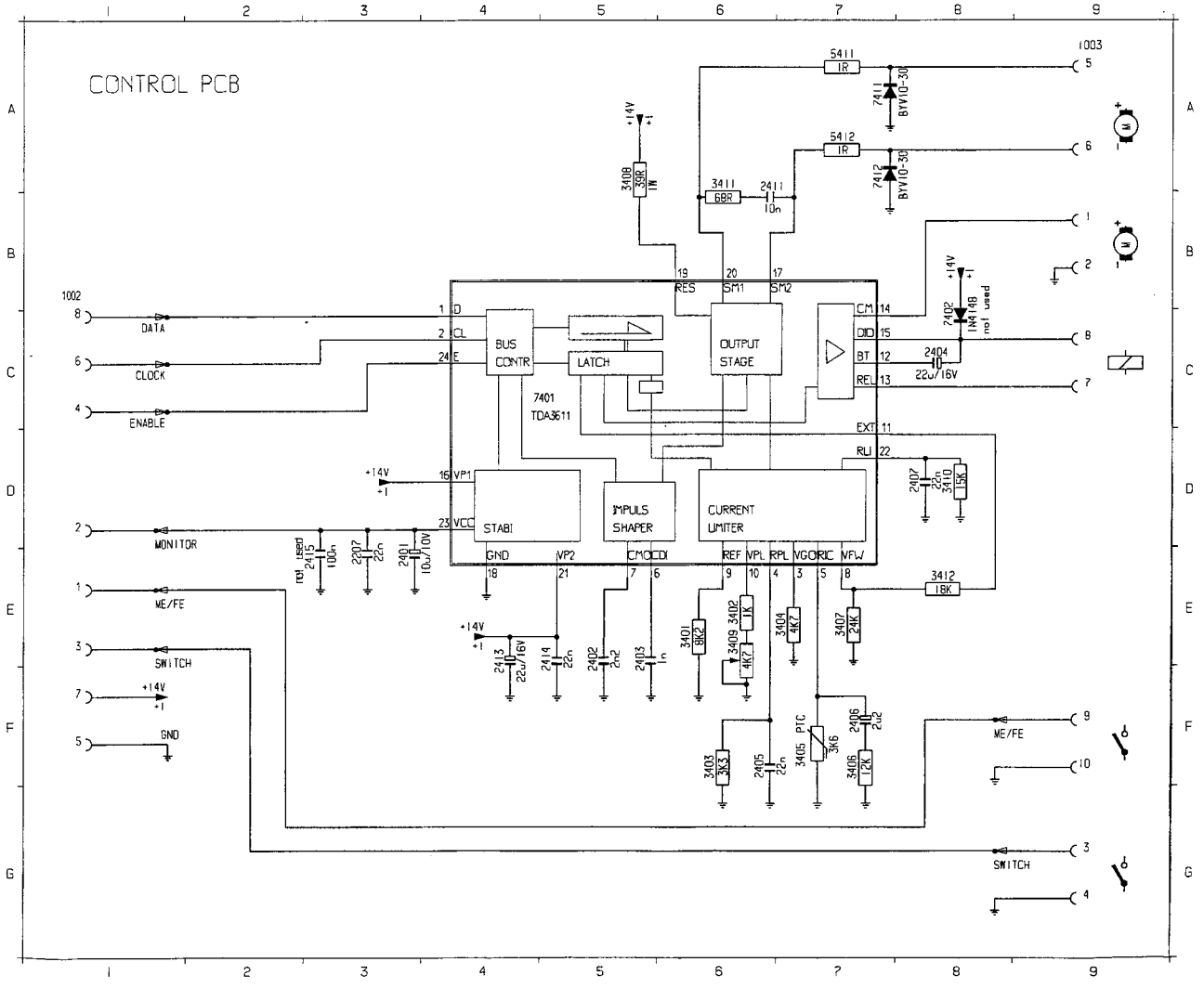


Fig. 8

1002	B 1	2402	E 5	2406	F 7	2414	E 5	3403	F 6	3407	E 7	3411	A 6	7401	C 4
1003	A 9	2403	E 5	2407	D 8	2415	E 3	3404	E 7	3408	A 5	3412	E 8	7402	C 8
2207	E 3	2404	C 8	2411	A 6	3401	E 6	3405	F 7	3409	E 6	5411	A 7	7411	A 7
2401	E 3	2405	F 6	2413	E 4	3402	E 6	3406	F 7	3410	D 8	5412	A 7	7412	A 7



MEASUREMENTS ON CONTROL PCB

ME/FE: 0,0 V (FE) / 5,0 V (ME/CR)
ON/OFF: 0,0 V (ON) / 5,0 V (OFF)

Pos. 7401 TDA 3611

1: 5,0 V
2: 5,0 V
3: 0,7 V / 0,0 V (Sb)
4: 0,8 V (PN) / 0,9 V (PR) / 0,3 V (W) / 0,0 V (Sb)
5: 0,8 V (PN) / 1,0 V (PR) / 0,4 V (W) / 0,0 V (Sb) / 0,1 V (TA)
6: 0,8 V (PN) / 1,0 V (PR) / 0,4 V (W) / 0,0 V (Sb) / 0,1 V (TA)
7: 0,7 V (P) / 1,8 V (W) / 0,0 V (Sb) / 0,6 V (TA)
8: 3,4 V / 0,0 V (Sb)
9: 1,2 V / 0,0 V (Sb)
10: 0,5 V / 0,0 V (Sb)
11: 3,4 V / 0,0 V (Sb)
12: 12,0 V
13: 0,5 V / 12,0 V (Sb)
14: 0,0 V / 11,5 V (P)
15: 11,5 V / 12,0 V (Sb)
16: 12,0 V
17: 0,1 V (PN) / 2,4 V (PR) / 0,0 V (WN) / 12,0 V (WR) / 0,0 V (Sb)
18: GND
19: 12,0 V / 8,5 V (P)
20: 2,4 V (PN) / 0,1 V (PR) / 12,0 V (WN) / 0,0 V (WR) / 0,0 V (Sb)
21: 12,0 V
22: 3,6 V (P) / 1,3 V (W) / 0,0 V (Sb)
23: 5,0 V
24: 5,0 V
All values measured DC - GND

(P) = Play mode both directions
(W) = Wind mode both directions
(PN) = Play NOR direction
(PR) = Play REV direction
(WN) = Wind NOR direction
(WR) = Wind REV direction
(Sb) = Standby
(TA) = Traffic anouncement

1002 A 1 2413 A 1 3409 A 1
1003 A 1 2414 A 1 3410 A 1
2207 A 1 2415 A 1 3411 A 1
2401 A 1 3401 A 1 3412 A 1
2402 A 1 3402 A 1 5411 A 1
2403 A 1 3403 A 1 5412 A 1
2404 A 1 3404 A 1 7401 A 1
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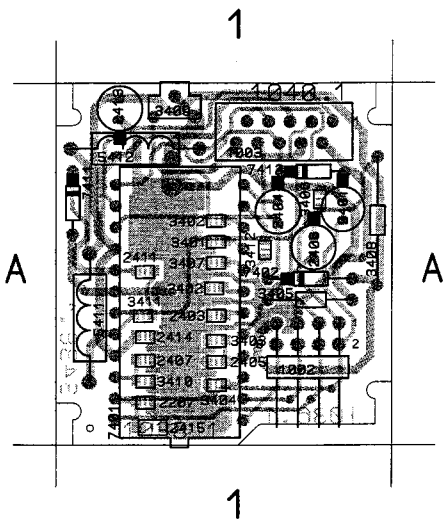
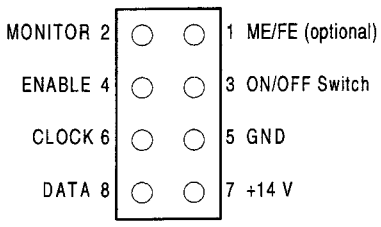
2411 A 1 3408 A 1

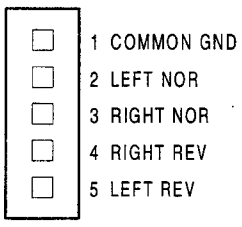


CONNECTORS

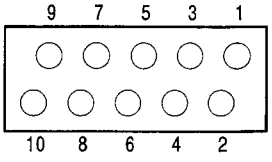
Control Connector
(View onto Radio-PCB)



Head Connector
(View onto Radio-PCB)

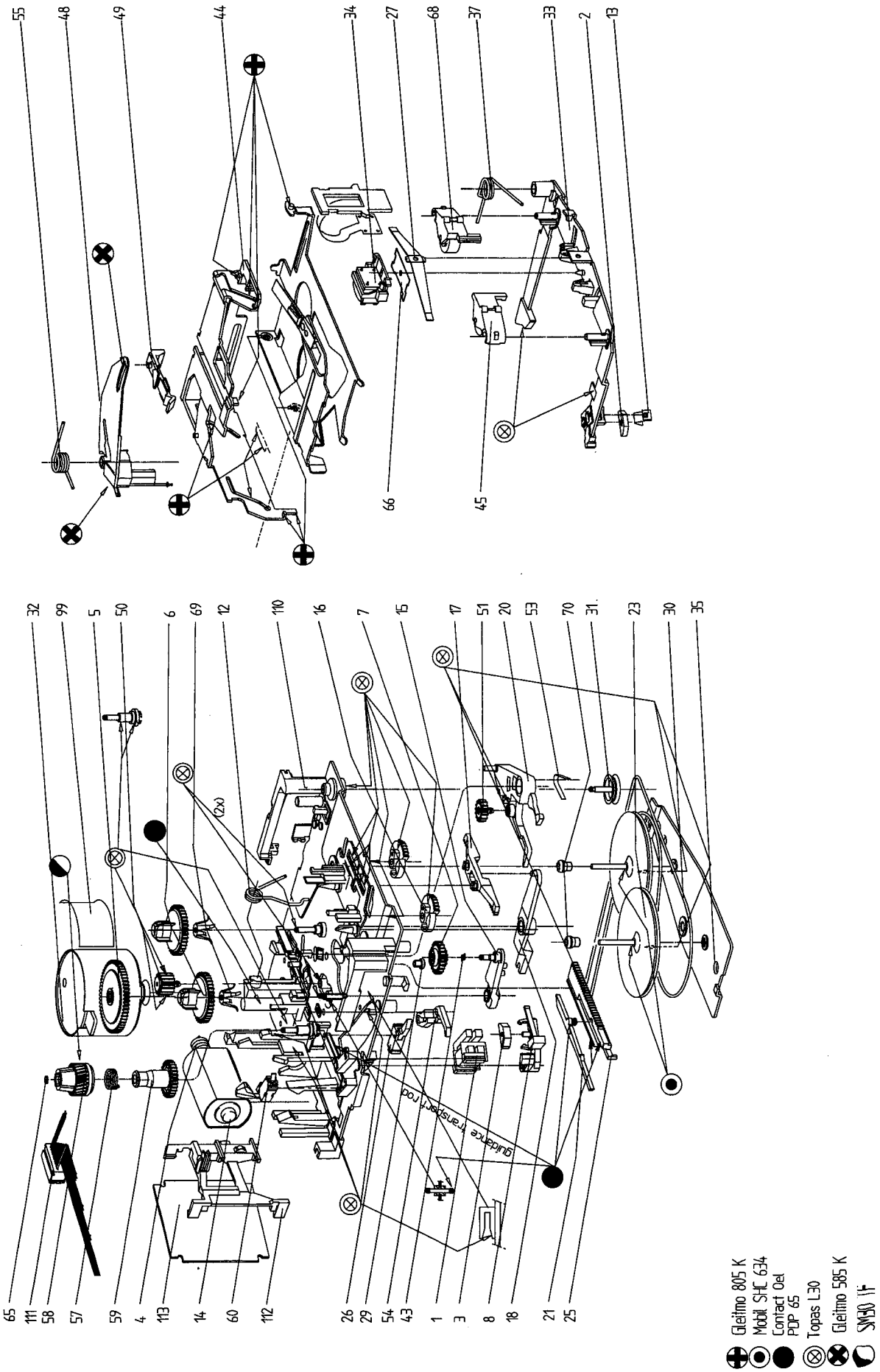


Deck Connector (Pos.1003)
(View onto Control-PCB)



1: Capstan +
2: Capstan -
3: ON/OFF Switch
4: GND
5: Servomotor +
6: Servomotor -
7: Magnet -
8: Magnet +
9: ME/FE Switch
10: GND

Front of Radio ↓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(2x)
Guidance Transport Rod
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54
43
1
3
8
18
21
25
Gleitmo 805 K
Mobil SHC 634
Contact Oel
PDP 65
Topas L30
Gleitmo 585 K
SW30 1F

MECHANICAL PARTS

1	4822 281 11051	DOUBLE
2	4822 404 21083	ANCHOR ON SUPPORT 33
3	4822 404 21084	ANCHOR IN HOLDER 8
5	4822 522 32868	WHEEL IDLER
6	4822 528 10776	CARRIER
7	4822 528 70658	ASSY
8	4822 404 21087	FOR ANCHOR 2
1	4822 492 70556	FOR ANCHOR 2
14	4822 361 30297	SERVO ASSY
16	4822 522 32869	NORMAL/REVERSE
17	4822 404 21089	DRIVING 16
20	4822 404 21086	ASSY SERVO GEARWHEEL
23	4822 528 81378	FLYWHEEL
26	4822 277 11215	ON/OFF
27	4822 492 70557	FOR PRES. ROLLER 45
29	4822 502 12548	FIX MOTOR 32
30	4822 358 31053	BELT, DRIVING
31	4822 528 81144	DIVERTING BELT
32	4822 361 30294	CAPSTAN
33	4822 404 21088	FOR HEAD,PRES.ROLLR
34	4822 249 30157	WITH FLEXPRINT
44	4822 466 82631	FOR CASSETTE
45	4822 528 81377	REVERSE
48	4822 404 21091	EJECT
49	4822 404 21092	HOLDING CASSETTE
50	4822 522 32871	COUPLING
59	4822 522 10435	ASSY
60	4822 277 11216	ME/CR
65	4822 532 52348	FOR CARRIER CLUTCH
68	4822 528 81449	NORMAL
69	4822 492 70926	UNDER CARRIER
70	4822 520 30539	FOR FLYWHEEL
111	4822 321 61954	CABLE, CONNECT
112	4822 256 92048	FOR PCB
113	4822 214 52077	PCB KOMPL.

ELECTRICAL PARTS

2207	5322 122 32654	22NF10%X7R 63V
2401	4822 124 22748	10UF 10V
2402	4822 122 33127	2,2NF10%X7R 63V
2403	4822 122 33178	1NF 20% X7R 50V
2404	4822 124 23279	22UF20% 16V
2405	5322 122 32654	22NF10%X7R 63V
2406	4822 124 41013	2,2UF 25V
2407	5322 122 32654	22NF10%X7R 63V
2411	4822 122 33177	10NF 20% X7R 50V
2413	4822 124 23279	22UF20% 16V
2414	5322 122 32654	22NF10%X7R 63V
3401	4822 051 20822	8K20 5% 0,1W
3402	4822 051 20102	1K00 5% 0,1W
3403	4822 051 20332	3K30 5% 0,1W
3404	4822 051 20472	4K70 5% 0,1W
3405	4822 116 40241	3K6 PTC
3406	4822 051 20123	12K00 5% 0,1W
3407	4822 051 20243	24K00 5% 0,1W
3408	4822 053 10399	39R00 5% 1W
3409	5322 101 11014	5K POTMETER
3410	4822 051 20153	15K00 5% 0,1W
3411	4822 051 20689	68R00 5% 0,1W
3412	4822 051 20183	18K00 5% 0,1W
5411	4822 050 21008	1R00 1% 0,6W
5412	4822 050 21008	1R00 1% 0,6W
7401	4822 209 32207	TDA3611
7411	4822 130 32911	BYV10-30
7412	4822 130 32911	BYV10-30

AIDS AND TOOLS

100	4822 390 10107	ISOFLEX PDP65
101	4822 390 20128	TOPAS L30
103	4822 390 10123	MOBIL OIL SHC 634
104	4822 390 20027	GLEITMO 805K
105	4822 390 20128	L30 TF
107	4822 390 20139	GLEITMO 585K

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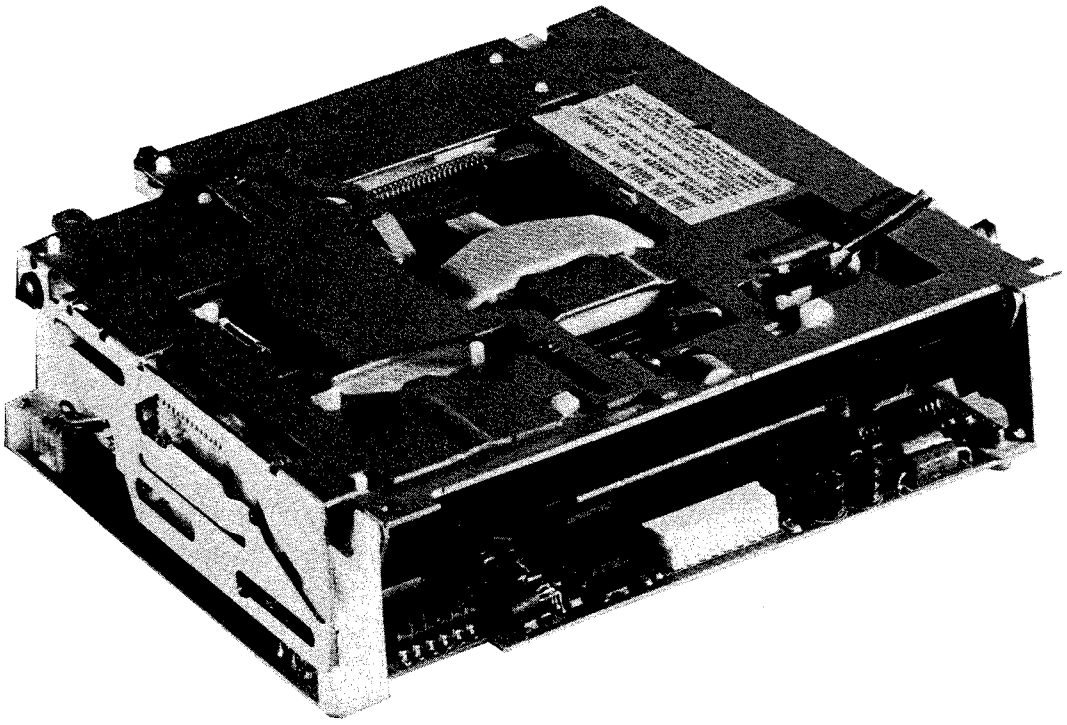
Service
Service
Service

VIDE-V16131

Service Manual

12 V



**CLASS 1
LASER PRODUCT**

Published by Philips Car Systems
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4822 725 23506

PCS 67 611

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SPEZIFICATION

Operating voltage:	10 V - 16 V
Operating temperature:	15°C - +70°C
Accesstime:	max. 2sec (inner to outer track)
Load- / Eject- time:	max. 4sec
Mounting angle (see page 5):	-10° - +20° +30° - +60° (optional)
Playability:	
- Testdisc 5A (4822 397 30096):	wedges 900m (track 9, time 19'59) blackdots - 800µm (track 17, time 40'04) fingerprints (track 18 + 19, time 42'46 + 45'06)
- Scewdisc (4822 701 11922):	first 10min without interruptions
- Eccentricity disc (4822 701 11923):	first 10min without interruptions

NOTE: Switch off power supply before connect and disconnect CDM 9 - Module and set (danger of shortcircuit)!

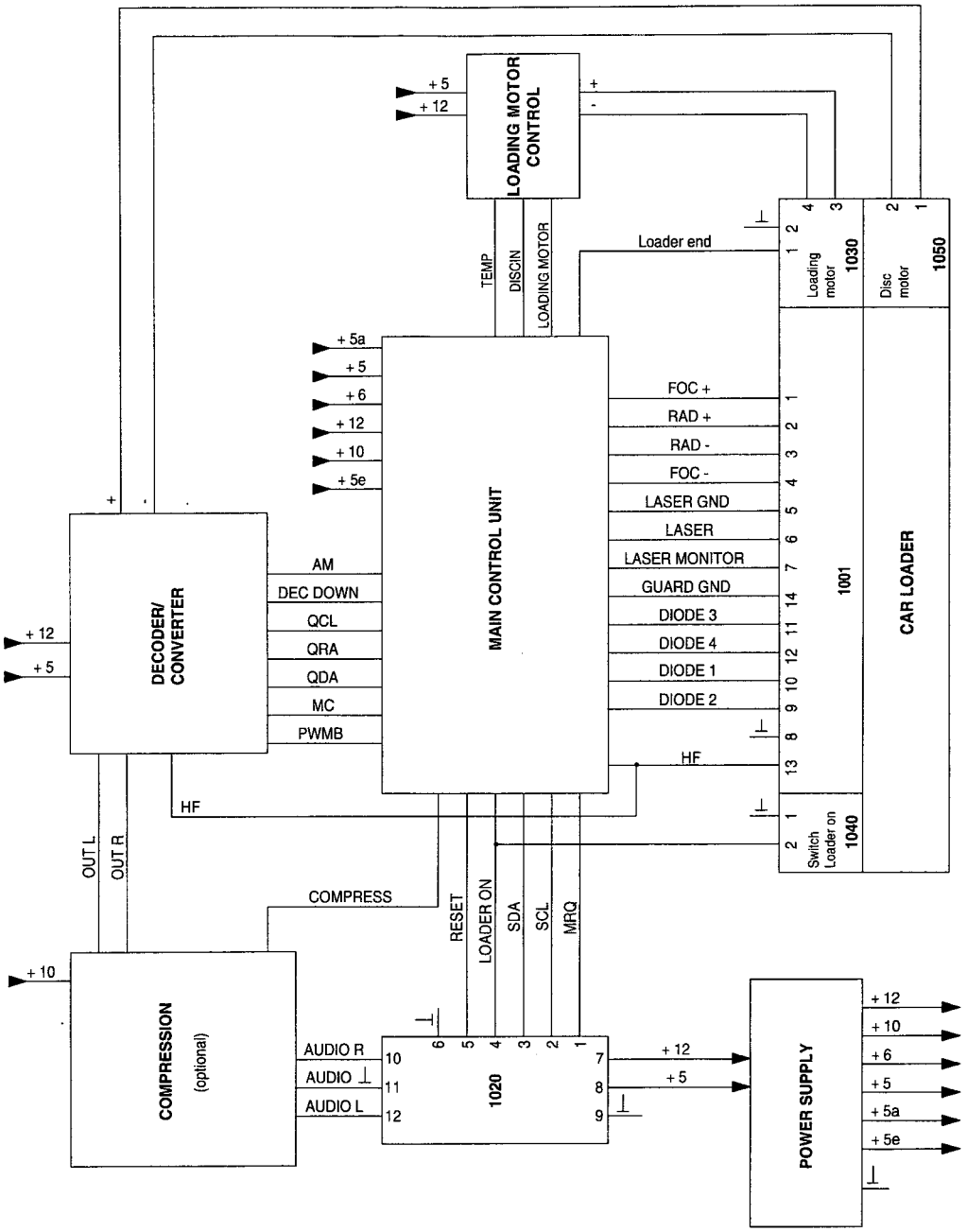
NOTE: Use the coded plugs and sockets to build the needed extension cables.

NOTE: The chassis of CDM 9 is not grounded when separated from the set.

NOTE: Only PLAY but no LOAD and EJECT can be realized in upside-down position.

NOTE: Measurements are done in PLAY (P), STANDBY (S) and DISC OUT (O), DC → GND.

Wiring Diagram

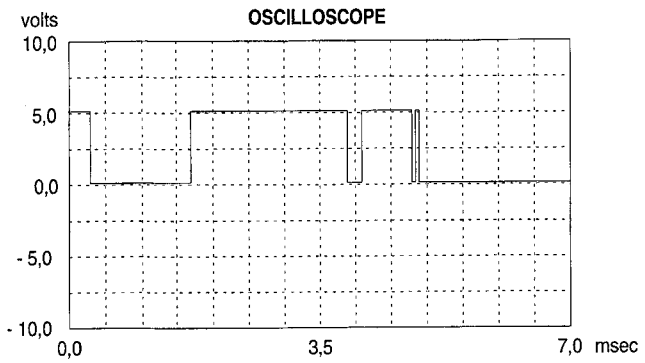


all values measured in PLAY (P), DC - GND

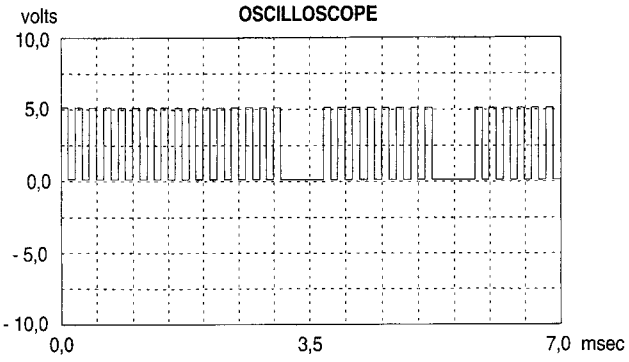
+ 5	= 5,0 V
+ 5a	= 4,7 V
+ 5e	= 5,0 V
+ 6	= 6,0 V
+10	= 8,4 V
+12	= 12,0 V
AUDIO-LEVEL (L+R)	= 0,0 V (1,2 V_{eff})
MRQ	= see oscillogram MRQ
SCL	= see oscillogram SCL
SDA	= see oscillogram SDA
LOADER ON	= 5,0 V
RESET	= 30 mV
COMPRESS	= HIGH when COMPRESS OFF, LOW when COMPRESS ON
HF	= 3,1 V (POS.1001, PIN 13)
QDA	= see oscillogram QDA
QRA	= see oscillogram QRA
QCL	= see oscillogram QCL
PWMB	= 5,0 V (intermittend data when focussing)
DEC. DOWN	= 0,0 V

AM	= 5,0 V
MC	= see oscillogram MC
TEMP	= 3,9 V (0,0 V if T ≥ 70°C)
DISC MOTOR +	= 5,4 V
DISC MOTOR -	= 4,8 V
LOADING MOTOR	= 3,4 V (5,0 V load, 0,0 V eject)
LOADING MOTOR +	= 3,7 V (0,9 V load, 6,3 V eject)
LOADING MOTOR -	= 3,7 V (6,3 V load, 0,9 V eject)
LOADER END	= 0,0 V (5,0 V CD OFF)
DISCIN	= 3,8 V (0,0 V during load)
FOC +	= 2,4 V
FOC -	= 2,6 V
RAD +	= see oscillogram RAD
RAD -	= see oscillogram RAD
LASER GND	= 0,0 V
LASER	= 2,0 V
LASER MONITOR	= 0,2 V
GUARD GND	= 0,0 V
DIODE 1	= 1,3 V
DIODE 2	= 1,3 V
DIODE 3	= 1,3 V
DIODE 4	= 1,3 V

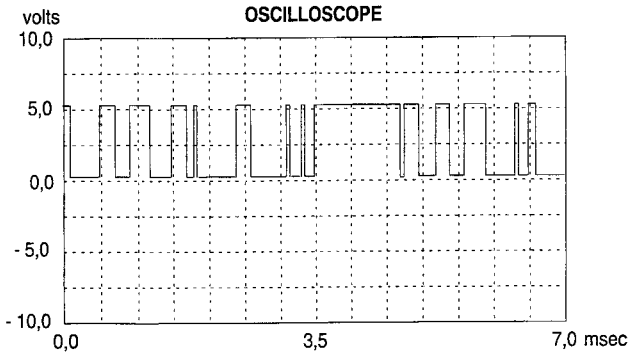
MRQ



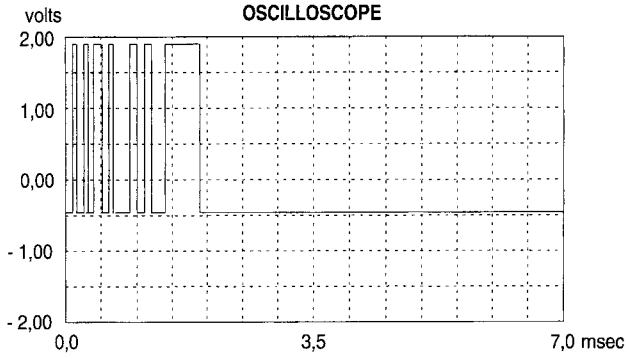
SCL



SDA



QDA



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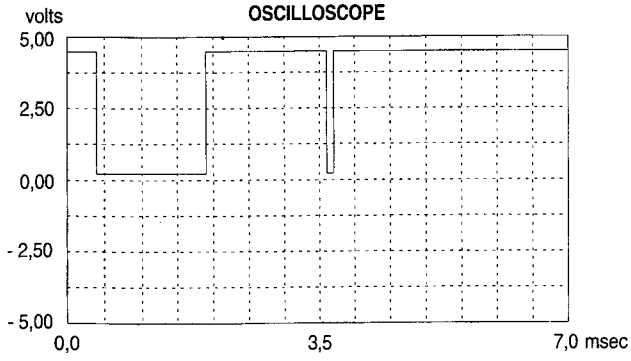
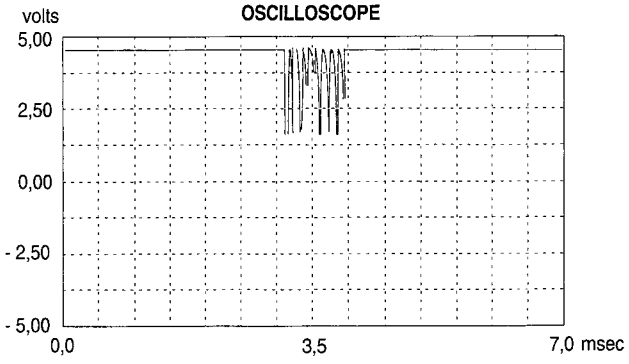
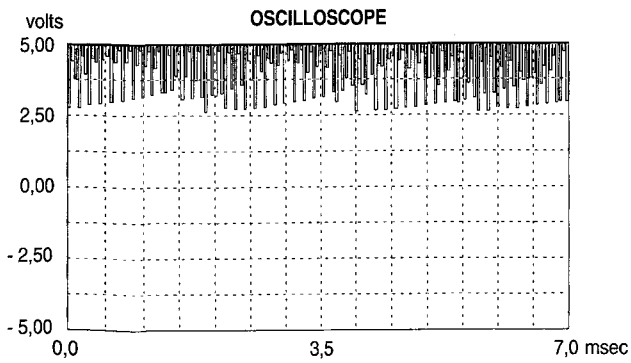


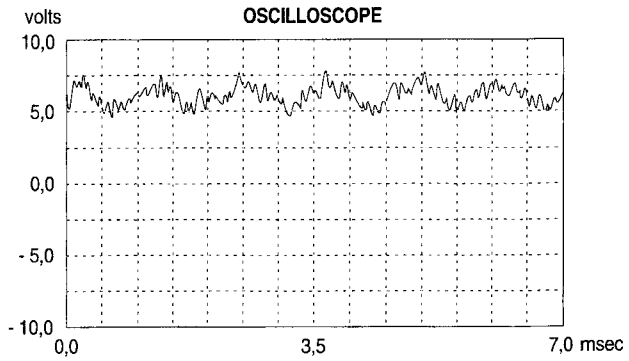
QCL



MC



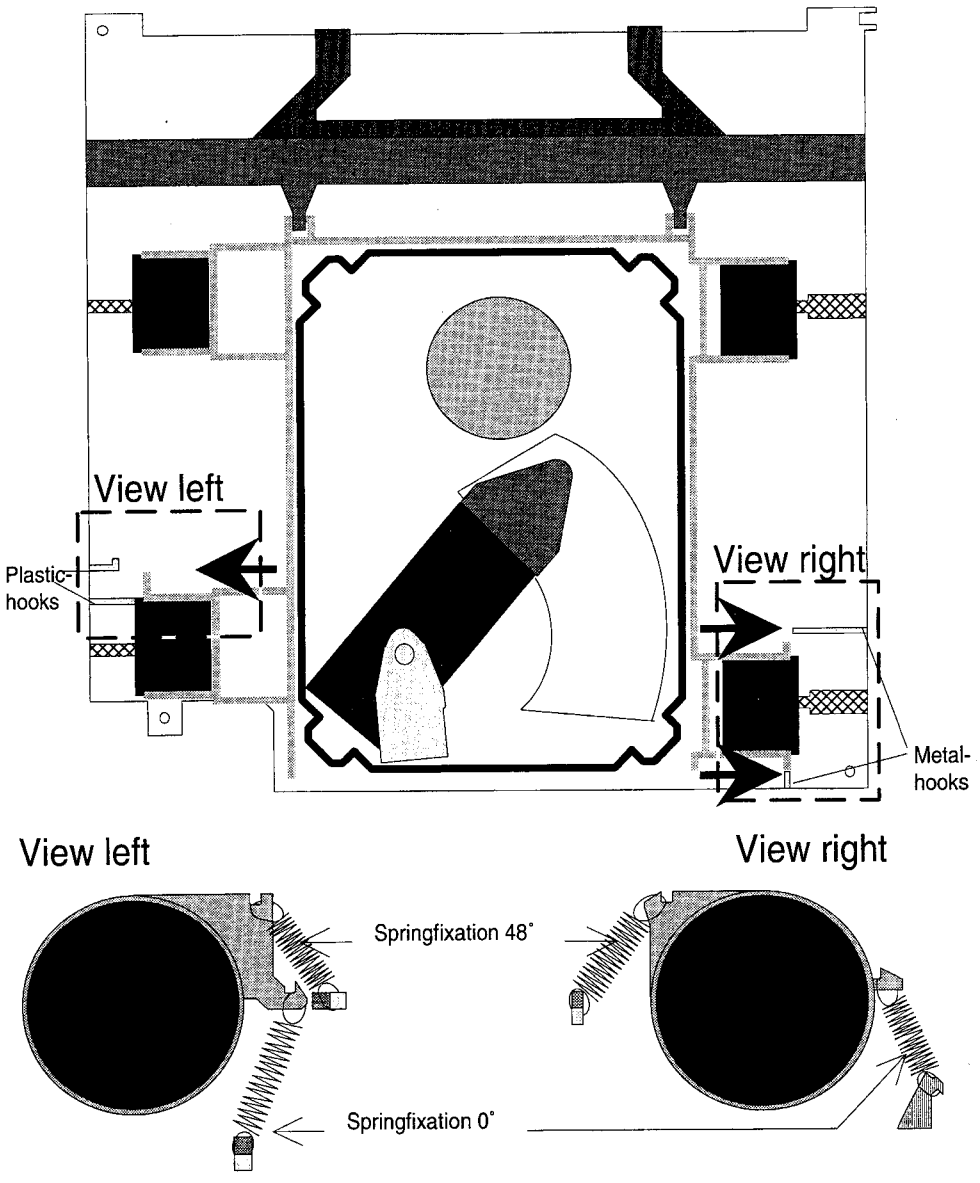
RAD



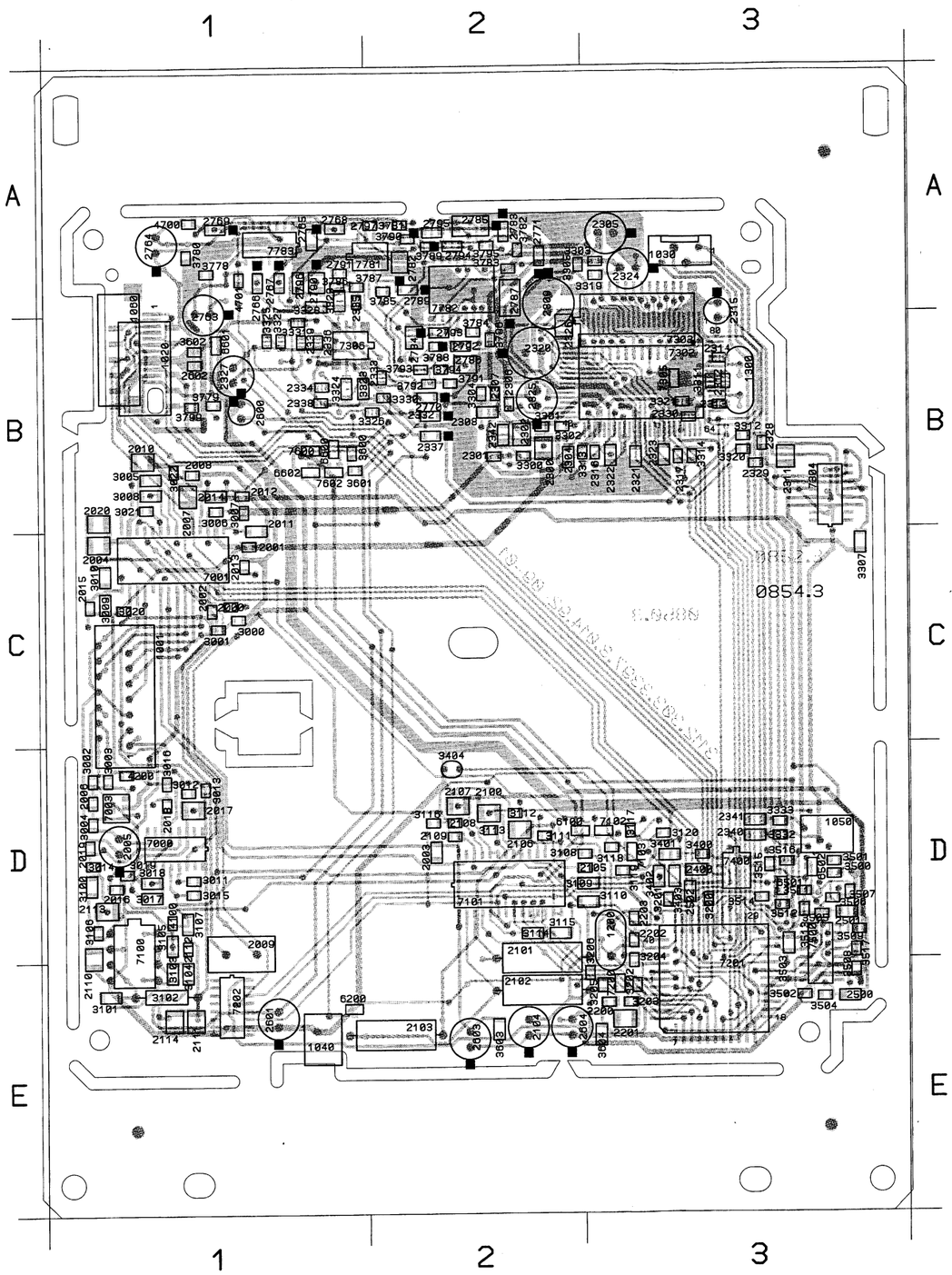
PCS 67 614

Adaptation of CDM 9 for playability at a mounting angle of 30° to 60°

Take the rear springs from the suspensions and put them in the additional fixation hooks as shown in the figure below (see also service-information A92 - 402).



Technician remarks



M100 B 2	M307 B 1	M475 D 3	2014 B 1	2767 A 1	3307 C 3	7000 D 1	
M101 B 2	M308 E 2	M477 D 3	2015 C 1	2768 A 1	3311 B 3	7001 C 1	
M102 B 2	M312 B 1	M478 D 1	2016 D 1	2769 A 1	3312 B 3	7003 D 1	
M103 B 2	M401 C 1	M479 E 1	2017 D 1	2770 B 2	3313 B 2	7100 D 1	
M104 A 3	M402 C 1	M480 E 1	2018 D 1	2771 A 2	3314 B 3	7101 D 2	
M105 B 1	M403 C 1	M481 D 1	2019 D 1	2782 A 2	3319 A 3	7102 D 3	
M106 B 2	M404 C 1	M482 E 1	2020 B 1	2783 A 2	3320 B 3	7103 D 3	
M107 B 2	M405 C 1	M483 D 1	2100 D 2	2784 B 2	3321 B 3	7200 E 3	
M108 B 2	M406 C 1	M484 E 1	2101 D 2	2785 A 2	3323 B 1	7201 E 3	
M109 B 3	M407 C 1	M485 B 1	2102 E 2	2786 B 2	3324 B 1	7202 E 1	
M110 B 3	M408 C 1	M486 E 3	2103 E 1	2787 A 2	3325 B 1	7302 B 3	
M111 B 3	M409 C 1	M487 D 3	2104 E 2	2789 A 2	3326 B 2	7303 B 3	
M112 B 3	M410 C 1	M488 D 3	2105 D 2	2790 A 1	3327 B 1	7304 B 3	
M113 A 2	M411 D 1	M489 D 3	2106 D 2	2791 A 1	3328 A 1	7305 B 3	
M114 B 3	M412 D 1	M490 D 3	2107 D 2	2792 B 2	3329 A 1	7306 B 1	
M115 C 3	M413 C 1	M501 A 2	2108 D 2	2793 B 2	3330 B 2	7400 D 3	
M116 C 3	M414 C 1	M502 A 2	2109 D 2	2794 A 2	3331 B 1	7500 D 3	
M117 B 3	M415 C 1	M503 A 2	2110 D 1	2795 A 2	3332 D 3	7600 B 1	
M118 B 3	M416 C 1	M505 A 2	2111 E 1	2796 A 1	3333 D 3	7602 B 1	
M119 B 3	M417 C 1	M506 A 2	2112 D 1	2797 A 2	3400 D 3	7781 A 2	
M120 B 3	M418 B 1	M507 A 2	2113 D 1	3000 C 1	3401 D 3	7782 A 2	
M121 B 3	M419 C 1	M508 B 2	2114 E 1	3001 C 1	3402 D 3	7783 A 1	
M122 B 3	M420 C 1	M509 A 2	2200 E 3	3002 D 1	3403 D 3		
M123 B 2	M421 C 1	M510 B 2	2201 E 3	3003 D 1	3404 D 2		
M124 B 3	M422 C 1	M511 B 2	2202 D 3	3004 D 1	3500 D 3		
M125 B 3	M423 B 1	M512 B 2	2203 D 3	3005 B 1	3501 D 3		
M126 B 3	M424 B 1	M513 B 2	2300 B 2	3006 B 1	3502 E 3		
M127 B 3	M425 C 1	M514 A 2	2301 B 2	3007 B 1	3503 D 3		
M128 C 3	M426 B 1	M515 A 2	2302 B 2	3008 B 1	3504 E 3		
M129 C 3	M427 C 1	M516 A 1	2304 B 2	3009 C 1	3505 D 3		
M130 B 3	M428 C 1	M517 A 2	2305 A 3	3010 C 1	3506 D 3		
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M133 B 2	M431 B 1	M520 A 2	2308 B 2	3013 D 1	3509 D 3		
M134 B 3	M432 D 1	M521 A 2	2309 A 2	3014 D 1	3511 D 3		
M135 A 3	M433 D 1	M522 A 2	2311 B 3	3015 D 1	3512 D 3		
M136 B 2	M434 D 1	M523 B 2	2312 B 3	3016 D 1	3513 D 3		
M137 B 1	M435 D 1	M524 A 2	2313 B 3	3017 D 1	3514 D 3		
M138 B 2	M436 C 1	M525 B 2	2314 B 3	3018 D 1	3515 D 3		
M139 B 1	M437 D 1	M526 B 2	2315 B 3	3019 D 1	3516 D 3		
M140 A 1	M438 D 1	M527 A 1	2316 B 3	3020 C 1	3517 D 3		
M141 B 1	M439 D 1	M528 A 1	2317 B 3	3021 B 1	3600 B 1		
M142 B 1	M440 D 1	M529 A 1	2320 B 2	3022 B 1	3601 B 1		
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M147 B 3	M445 D 2	M534 A 1	2325 B 2	3104 E 1	3779 B 1		
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M200 D 3	M448 D 2	M537 B 1	2328 B 3	3107 D 1	3782 A 2		
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M202 D 3	M450 D 2	M545 A 1	2330 B 3	3109 D 3	3784 B 2		
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M208 D 3	M456 D 2	1040 E 1	2337 B 2	3115 D 2	3790 A 2		
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M304 B 1	M472 E 2	2011 B 1	2764 A 1	3303 A 3	6600 B 1		
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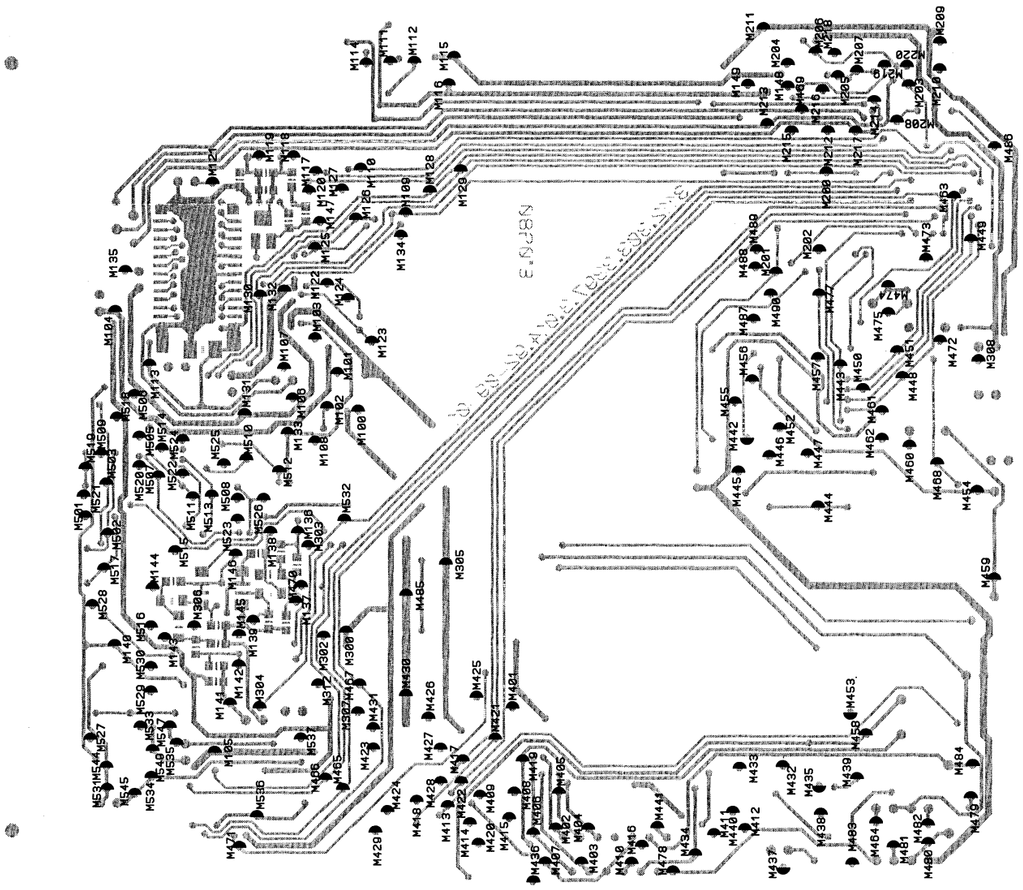


POS. 7302 SAA 7341

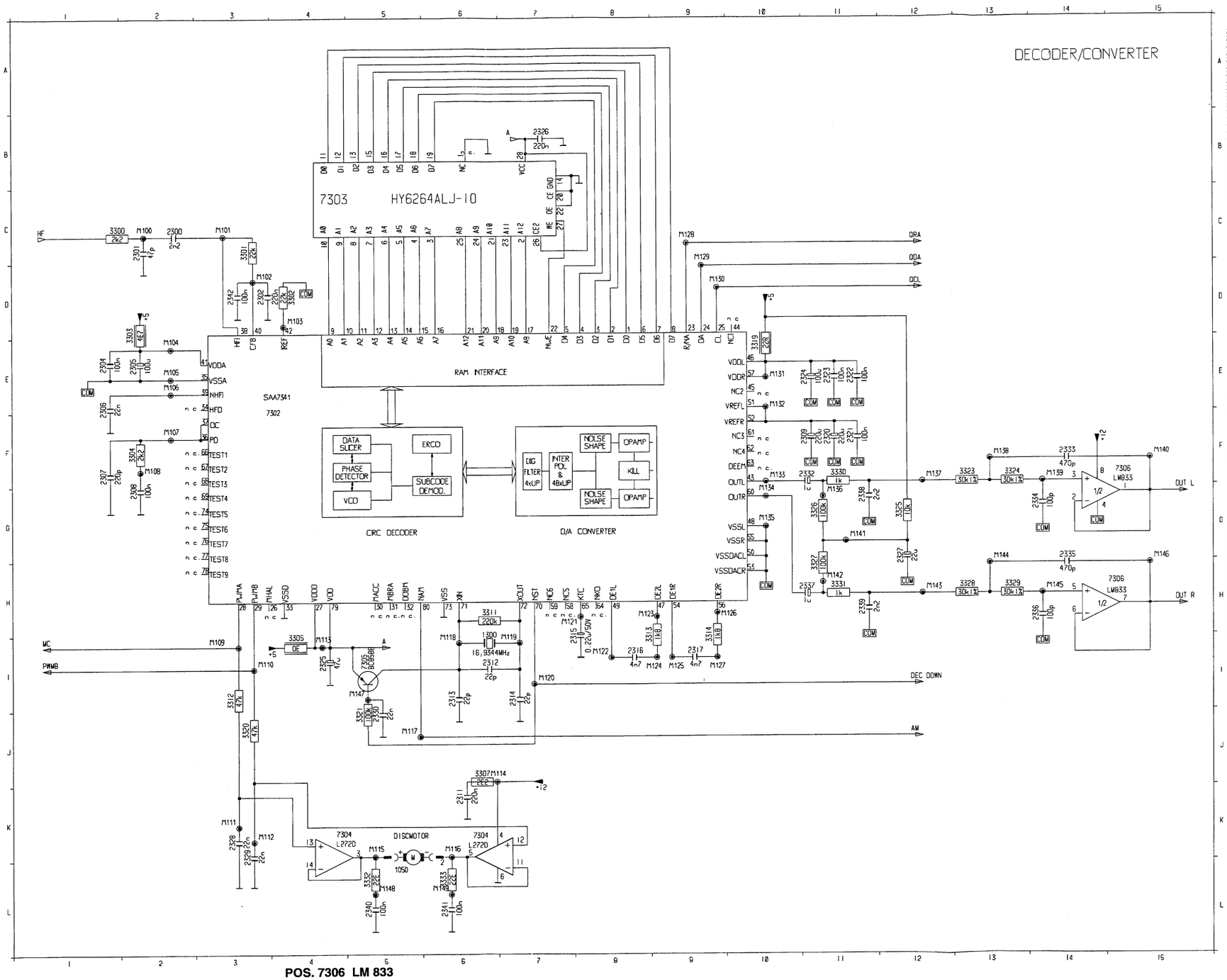
	1 - 22: DATA
M128	23: see QRA (P) / 40 mV (S,O)
M129	24: see QDA (P) / 0,0 V (S,O)
M130	25: see QCL (P) / 5,0 V (S,O)
	26: nc
M113	27: 5,0 V (P,S,O)
M109	28: see MC (P) / 0,0 V (S,O)
M110	29: 5,0 V (P,S,O)
	30 - 32: nc
	33: GND
	34: nc
	35: GND
M107	36: 2,8 V (P) / 130 mV (S,S-O) / 5,0 V (P-O)
M107	37: 2,8 V (P) / 130 mV (S,S-O) / 5,0 V (P-O)
M101	38: 2,5 V (P,S,O)
M106	39: 2,5 V (P,S,O)
M102	40: 2,5 V (P,S,O)
M104	41: 5,0 V (P,S,O)
M103	42: 2,2 V (P,S,O)
M133	43: 2,2 V (P,S,O)
	44 - 45: nc
M131	46: 4,4 V (P,S,O)
M123	47: 2,2 V (P) / 2,3 V (S,O)
	48: GND
M122	49: AF (P) / 0,0 V (S,O)
	50: GND
M132	51: 2,2 V (P,S,O)
M132	52: 2,2 V (P,S,O)
	53: GND
M125	54: AF (P) / 0,0 V (S,O)
	55: GND
M126	56: 2,2 V (P) / 2,3 V (S,O)
M131	57: 4,4 V (P,S,O)
	58 - 59: nc
M134	60: 2,2 V (P,S,O)
	61 - 64: nc
M121	65: 5,0 V (P,S,O)
	66 - 69: nc
M120	70: DEC.DOWN
M118	71: 2,2 V (P) / 5,0 V (S,O)
M119	72: 2,3 V (P) / 0,0 V (S,O)
	73: GND
	74 - 78: nc
M113	79: 5,0 V (P,S,O)
M117	80: 5,0 V (P,S,O)

POS. 7303 HY 6264 ALJ-10

	1: GND
	2 - 13: DATA
	14: GND
	15 - 19: DATA
	20: GND
	21: DATA
	22: GND
	23 - 25: DATA
	26: 5,0 V (P,S,O)
	27: DATA
	28: 5,0 V (P,S,O)

POS. 7304 L 272D

	1: nc
	2: nc
M115	3: 4,2 V (P) / 5,0 V (S,O)
M114	4: 12,0 V (P,S,O)
M116	5: 5,0 V (P,S,O)
	6: GND
	7: nc
	8: nc
	9: nc
	10: nc
M116	11: 5,0 V (P,S,O)
M112	12: 5,0 V (P,S,O)
M111	13: 4,2 V (P) / 5,0 V (S,O)
M115	14: 4,2 V (P) / 5,0 V (S,O)
	15: nc
	16: nc

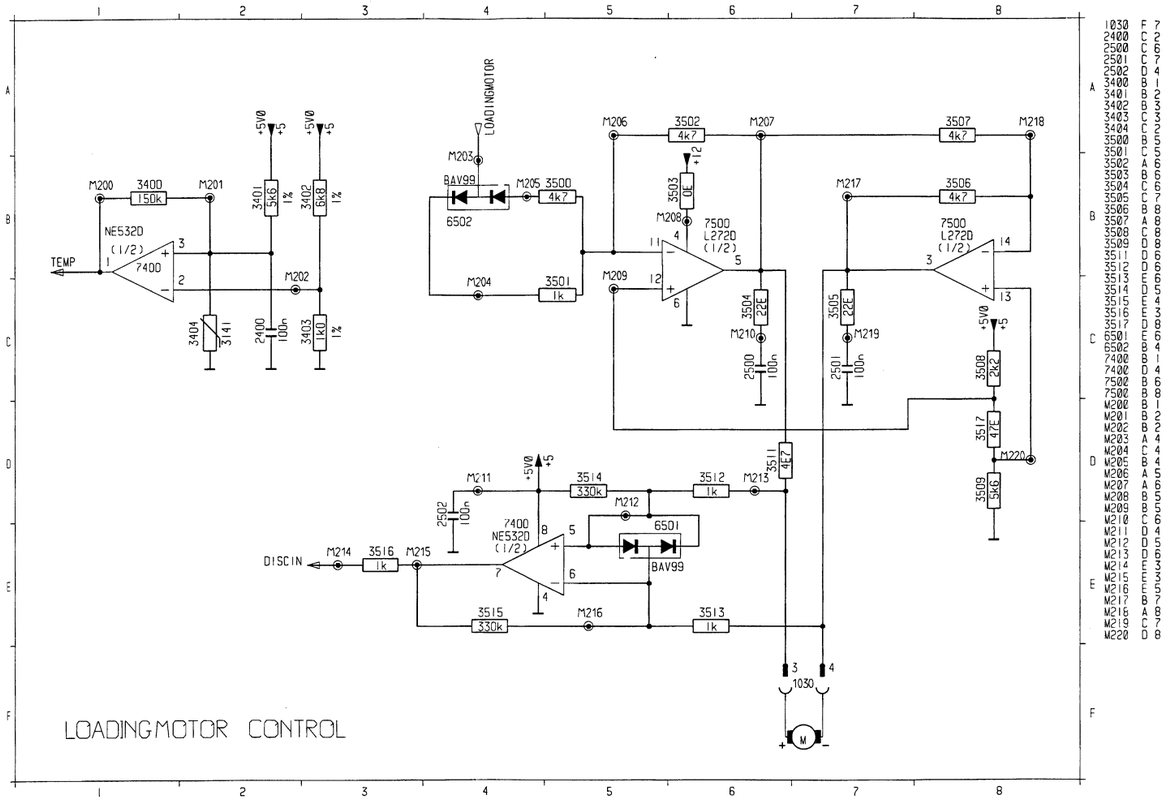


POS. 7305 BC 858

M147	B: 5,0 V (P) / 4,4 V (S,O)
M118	C: 2,2 V (P) / 5,0 V (S;O)
M113	E: 5,0 V (P,S,O)

POS. 7306 LM 833

M140	1: AF 5,0 V (P) / 5,0 V (S,O)
M140	2: AF 5,0 V (P) / 5,0 V (S,O)
M139	3: AF 5,0 V (P) / 5,0 V (S,O)
	4: GND
M145	5: AF 5,0 V (P) / 5,0 V (S,O)
M146	6: AF 5,0 V (P) / 5,0 V (S,O)
M146	7: AF 5,0 V (P) / 5,0 V (S,O)
	8: 12,0 V



POS. 6501 BAV 99

M212	1: 3,6 V (P,S,O)
M212	2: 3,6 V (P,S,O)
M216	3: 3,5 V (P,S,O)

POS. 6502 BAV 99

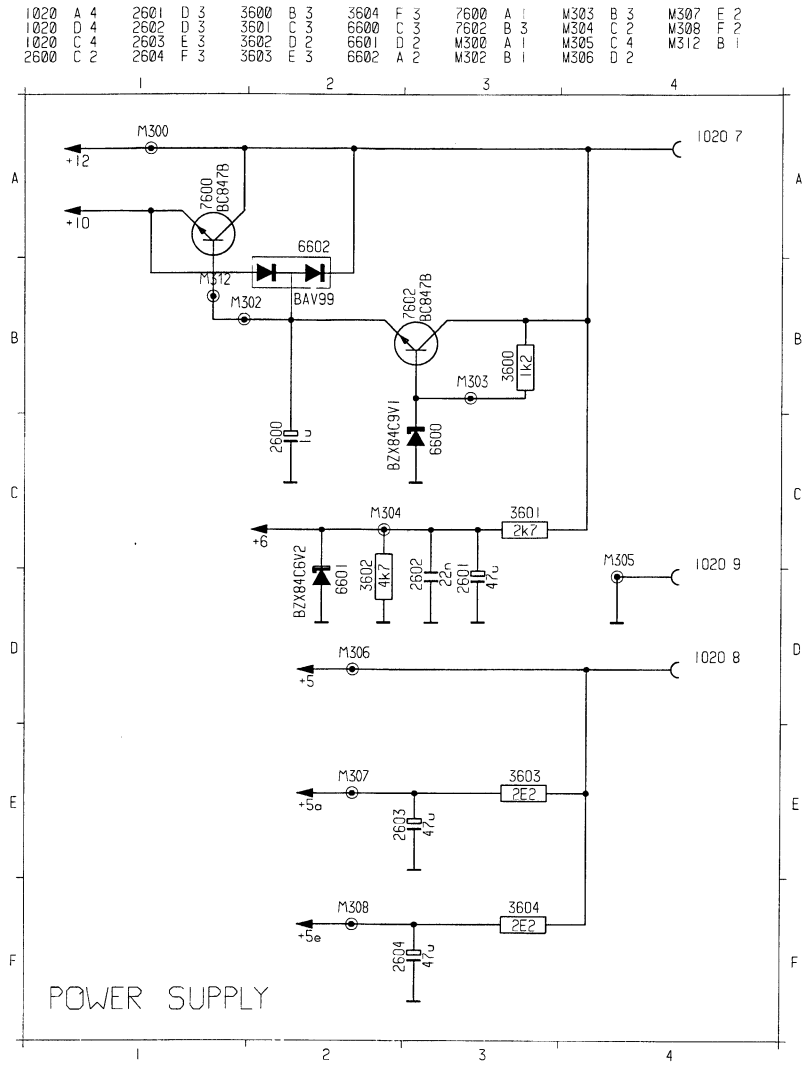
M204	1: 3,6 V (P,S,O) / 4,2 V (LOAD)
M205	2: 3,6 V (P,S,O) / 1,0 V (EJECT)
M203	3: 3,4 V (P,S,O) / 5,0 V (LOAD) / 0,0 V (EJECT)

POS. 7400 NE 532D

M200	1: 3,9 V (P,S,O) / 0,0 V (T 70$C)
M202	2: 0,6 V (P,S,O)
M201	3: 2,3 V (P,S,O)
	4: GND
M212	5: 3,6 V (P,S,O)
M216	6: 3,5 V (P,S,O)
M215	7: 3,8 V (P,S,O) / 0,0 V (LOAD)
M211	8: 5,0 V (P,S,O)

POS. 7500 L 272D

	1: nc
	2: nc
M217	3: 3,5 V (P,S,O) / 6,5 V (LOAD) / 0,5 V (EJECT)
M208	4: 12,0 V (P,S,O)
M207	5: 3,5 V (P,S,O) / 0,5 V (LOAD) / 6,5 V (EJECT)
	6: GND
	7: nc
	8: nc
	9: nc
	10: nc
M206	11: 3,6 V (P,S,O)
M209	12: 3,6 V (P,S,O)
M220	13: 3,6 V (P,S,O)
M218	14: 3,6 V (P,S,O)
	15: nc
	16: nc



POS. 6602 BAV 99

M300	1: 12,0 V (P,S,O)
	2: 8,4 V (P,S,O)
M302	3: 9,0 V (P,S,O)

POS. 7600 BC 847B

M302	B: 9,0 V (P,S,O)
M300	C: 12,0 V (P,S,O)
	E: 8,4 V (P,S,O)

POS. 7602 BC 847B

M303	B: 9,5 V (P,S,O)
M300	C: 12,0 V (P,S,O)
M302	E: 9,0 V (P,S,O)

POS. 7000 L 272D

	1: nc
	2: nc
M434	3: 2,6 V (P) / 2,4 V (S,O)
M437	4: 12,0 V (P,S,O)
M441	5: 2,4 V (P) / 2,6 V (S,O)
	6: GND
	7: nc
	8: nc
	9: nc
	10: nc
M438	11: 2,5 V (P,S,O)
M439	12: 2,5 V (P,S,O)
M435	13: 2,5 V (P,S,O)
M432	14: 2,5 V (P,S,O)
	15: nc
	16: nc

POS. 7001 TDA 8808T/C3

M426	1: 2,5 V (P) / 0,4 V (S,O)
	2: 4,7 V (P) / 5,0 V (S,O)
M427	3: 2,0 V (P) / 2,5 V (S,O)
M423	4: 2,2 V (P,S,O)
	5: not const. (P) / 0 V (S,O)
M417	6: 2,8 V (P) / 0,0 V (S,O)
M428	7: 0,6 V (P,S,O)
M424	8: 1,3 V (P,S,O)
M418	9: 0,0 V (P,S,O)
M422	10: 4,6 V (P) / 70 mV (S,O)
M413	11: 4,7 V (P) / 5,0 V (S,O)
M421	12: 5,0 V (P) / 0,0 V (S,O)
	13: GND
M429	14: 2,8 V (P) / 3,8 V (S,O)
M420	15: 2,5 V (P,S,O)
M419	16: 2,5 V (P,S,O)
M416	17: 3,4 V (P) / 0 V (S,O)
M415	18: 0,2 V (P) / 0,0 V (S,O)
M414	19: 1,7 V (P) / 4,2 V (S,O)
M409	20: 2,9 V (P) / 3,7 V (S,O)
M408	21: 2,9 V (P) / 3,7 V (S,O)
M404	22: 1,3 V (P) / 0,0 V (S,O)
M403	23: 1,3 V (P) / 0,0 V (S,O)
M405	24: 1,3 V (P) / 0,0 V (S,O)
M406	25: 1,3 V (P) / 0,0 V (S,O)
	26: 1,4 V (P,S,O)
	27: GND
M425	28: 3,2 V (P) / 3,6 V (S,O)

POS. 7003 BC 868

M412	B: 3,5 V (P) / 0 V (S,O)
	C: 3,8 V (P) / 4,7 V (S,O)
M411	E: 2,8 V (P) / 0 V (S,O)

POS. 7100 TCA 0372DP1

M478	1: 6,0 V (P,S,O)
M481	2: 12,0 V (P,S,O)
M480	3: 6,0 V (P,S,O)
	4: GND
M482	5: 6,0 V (P,S,O)
	6: 6,0 V (P,S,O)
	7: 6,0 V (P,S,O)
M464	8: 6,0 V (P,S,O)

POS. 7101 TDA 8809T/C2

	1: 4,7 V (P) / 5,0 V (S,O)
M459	2: sinus 2,5 V (P,S,O)
M460	3: sinus 2,5 V (P,S,O)
M462	4: 0,1 V (P,S,O)
M461	5: 1,3 V (P,S,O)
M444	6: 4,5 V (P,S,O)
M443	7: 2,3 V (P) / 5,0 V (S,O)
M448	8: 0,0 V (P,S,O)
M449	9: 5,0 V (P) / 0,0 V (S,O)
M450	10: 5,0 V (P,S,O)
M451	11: 5,0 V (P,S,O)
	12: 8,4 V (P,S,O)
	13: GND
	14: GND
M453	15: 6,0 V (P,S,O)
M454	16: 2,5 V (P,S,O)
M456	17: 2,5 V (P,S,O)
M455	18: 2,5 V (P,S,O)
M457	19: 2,5 V (P,S,O)
M458	20: 2,5 V (P,S,O)
M442	21: not const. 1,8...2,1 V (P) / 3,7 V (S,O)
M452	22: 1,2 V (P,S,O)
M445	23: not const. (P) / 0,6 V (S,O)
M445	24: not const. (P) / 0,6 V (S,O)
M446	25: 2,6 V (P) / 5,0 V (S,O)
M447	26: 2,0 V (P) / 4,3 V (S,O)
M409	27: 2,9 V (P) / 3,7 V (S,O)
M408	28: 2,9 V (P) / 3,7 V (S,O)

POS. 7102 BC 847B

M487	B: 1,8 V (P) / 3,5 V (S,O)
M488	C: 4,3 V (P) / 3,0 V (S,O)
M490	E: 3,0 V (P,S,O)

POS. 7103 BC 858B

M489	B: 4,3 V (P,S,O)
M486	C: 0,0 V (P) / 5,0 V (S,O)
	E: 5,0 V (P,S,O)

POS. 7200 BC 847B

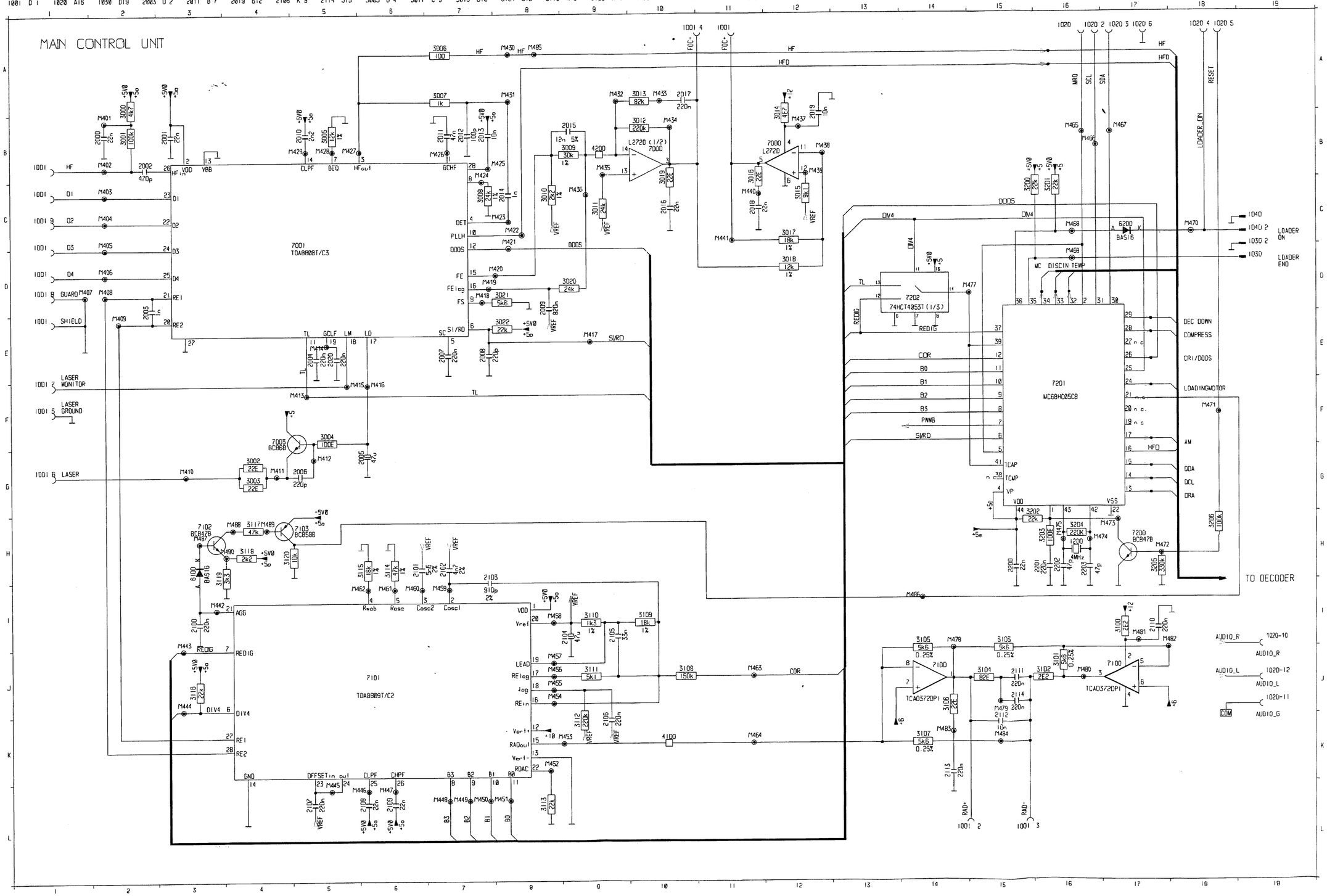
M472	B: 20 mV (P,S,O)
M473	C: 5,0 V (P,S,O)
	E: GND

POS. 7201 MC 68HC05C8

M473	1: 5,0 V (P,S,O)
M465	2: see MRQ (P) / 5,0 V (S,O)
	3: nc
	4: 5,0 V (P,S,O)
M465	5: see MRQ (P) / 5,0 V (S,O)
M417	6: 2,8 V (P) / 0,0 V (S,O)
M110	7: 5,0 V (P,S,O)
M448	8: 0,0 V (P,S,O)
M449	9: 5,0 V (P) / 0,0 V (S,O)
M450	10: 5,0 V (P,S,O)
M451	11: 5,0 V (P,S,O)
M463	12: 2,3 V (P,S,O)
M128	13: see QRA (P) / 40 mV (S,O)
M130	14: see QCL (P) / 5,0 V (S,O)
M129	15: see QDA (P) / 0,0 V (S,O)
M422	16: 3,9 V (P) / 70 mV (S,O)
M117	17: 5,0 V (P,S,O)
	18: nc
	19: nc
	20: nc
M486	21: 0,0 V (P) / 5,0 V (S,O)
	22: GND
	23: nc
M203	24: 3,4 V (P,S,O)
M444	25: 4,5 V (P,S,O)
M421	26: 5,0 V (P) / 0,0 V (S,O)
	27: nc
M532	28: 5,0 V (COMPRESS OFF) / 0,0 V (COMPRESS ON)
M120	29: 0,0 V (P) / 5,0 V (S,O)
M467	30: see SDA (P) / 5,0 V (S,O)
M466	31: see SCL (P) / 5,0 V (S,O)
M200	32: 3,9 V (P,S,O)
M214	33: 3,8 V (P,S,O) / 0,0 V (LOAD)
M109	34: see MC (P) / 70 mV (S,O)
M469	35: 0,0 V (P,S) / 5,0 V (O)
M468	36: 5,0 V (P,S,O)
M443	37: 2,3 V (P) / 5,0 V (S,O)
	38: nc
M477	39: 4,7 V (P) / 5,0 V (S,O)
	40: nc
M477	41: 4,7 V (P) / 5,0 V (S,O)
M474	42: 2,7 V (P,S,O)
M475	43: 2,4 V (P,S,O)
	44: 5,0 V (P,S,O)

PCS 67 622 Printed by: Schaltungsdienst Lange, Berlin (GERMANY)

MAIN CONTROL UNIT



POS. 7781 LM 833

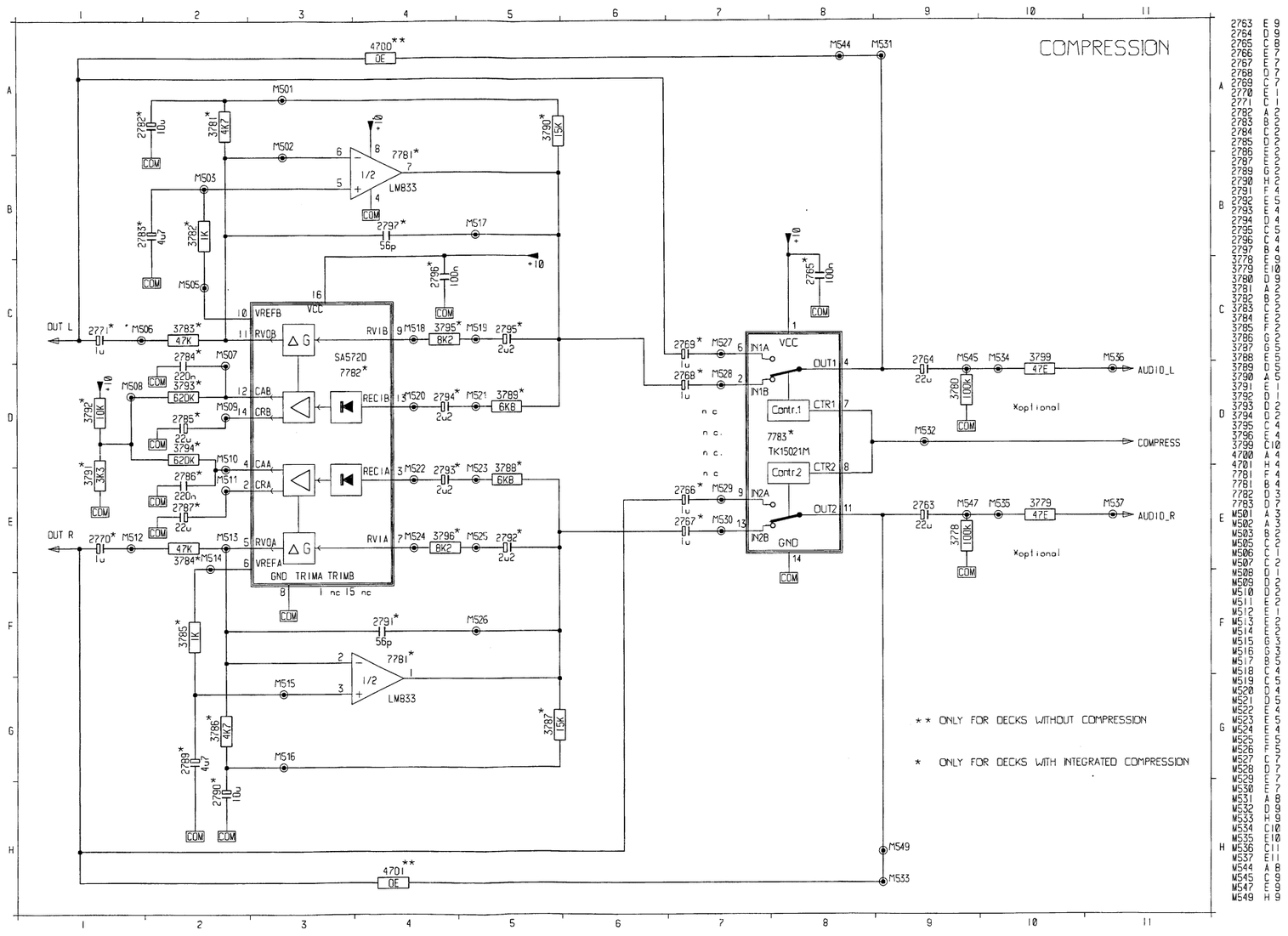
M526	1: 2,5 V (P,S,O)
M513	2: 2,5 V (P,S,O)
M515	3: 2,5 V (P,S,O)
	4: GND
M503	5: 2,5 V (P,S,O)
M502	6: 2,5 V (P,S,O)
M517	7: 2,5 V (P,S,O)
	8: 8,0 V (P,S,O)

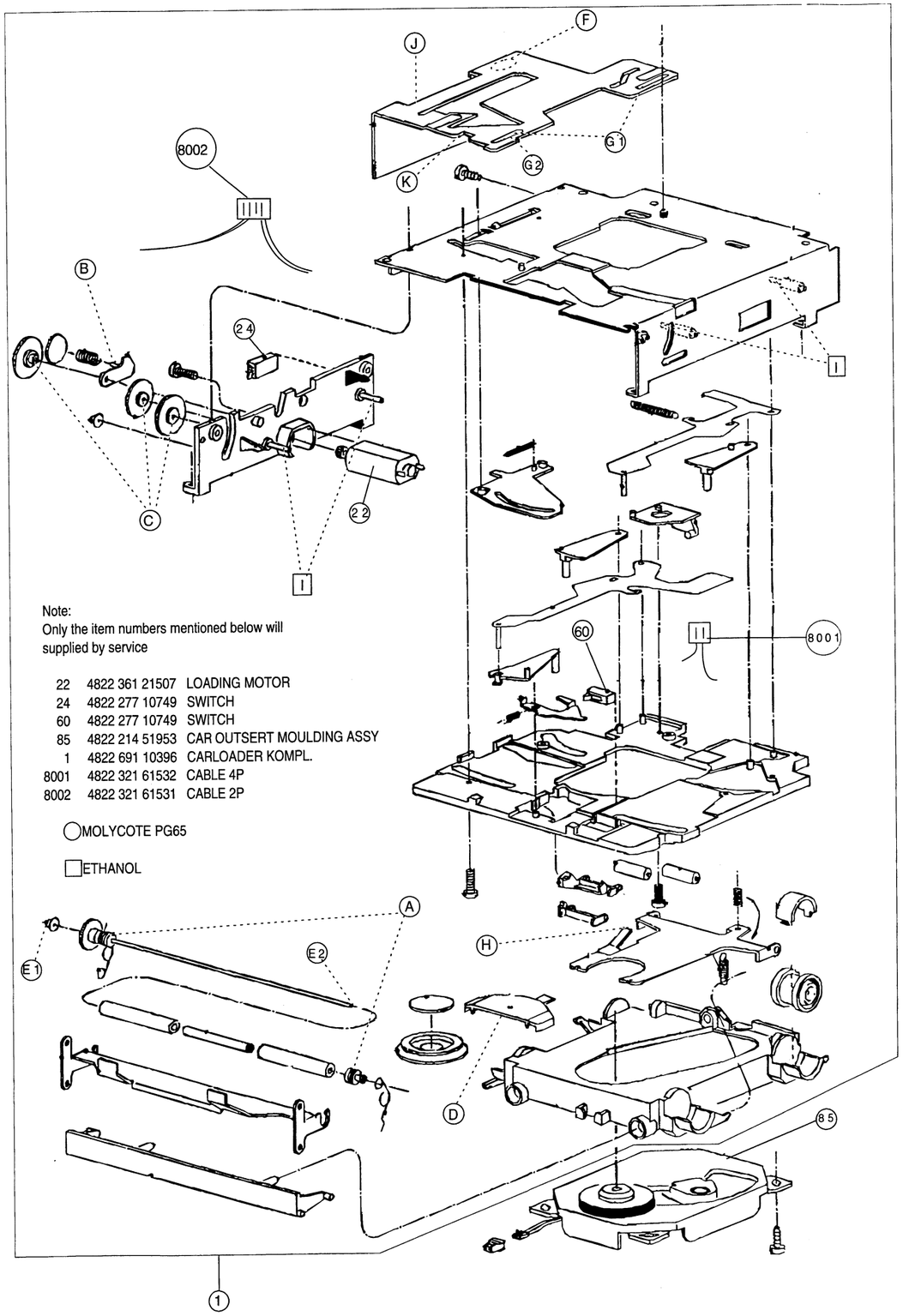
POS. 7782 SA 572D

	1: nc
M511	2: AF 1,5 V (P) / 1,1 V (S,O)
M522	3: 2,5 V (P,S,O)
M510	4: AF 1,5 V (P) / 1,1 V (S,O)
M513	5: 2,5 V (P,S,O)
M514	6: 2,5 V (P,S,O)
M524	7: 2,5 V (P,S,O)
	8: GND
M518	9: 2,5 V (P,S,O)
M505	10: 2,5 V (P,S,O)
M502	11: 2,5 V (P,S,O)
M507	12: AF 1,5 V (P) / 1,1 V (S,O)
M520	13: 2,5 V
M509	14: AF 1,5 V (P) / 1,1 V (S,O)
	15: nc
	16: 8,0 V (P,S,O)

POS. 7783 TK 15021M

	1: 8,0 V (P,S,O)
M528	2: 4,0 V (P,S,O)
	3: nc
M531	4: 4,0 V (P,S,O)
	5: nc
M527	6: 4,0 V (P,S,O)
M532	7: 5,0 V (COMPRESS OFF) / 0,0 V (COMPRESS ON)
M532	8: 5,0 V (COMPRESS OFF) / 0,0 V (COMPRESS ON)
M529	9: 4,0 V (P,S,O)
	10: nc
M549	11: 4,0 V (P,S,O)
	12: nc
M530	13: 4,0 V (P,S,O)
	14: GND





Note:
Only the item numbers mentioned below will supplied by service

22	4822 361 21507	LOADING MOTOR
24	4822 277 10749	SWITCH
60	4822 277 10749	SWITCH
85	4822 214 51953	CAR OUTSERT MOULDING ASSY
1	4822 691 10396	CARLOADER KOMPL.
8001	4822 321 61532	CABLE 4P
8002	4822 321 61531	CABLE 2P

◯MOLYCOTE PG65

□ETHANOL

Mechanical partslist

1	4822 502 11715	M 2,5X5 PAN>STZNBK
2	4822 502 30541	2,2X(PT/PAN+STZN
8 1 1	4822 529 10277	SHOCK ABSORBER
9 1 1	4822 529 10277	SHOCK ABSORBER
10 1 1	4822 529 10277	SHOCK ABSORBER
11 1 1	4822 529 10277	SHOCK ABSORBER
22 1 1	4822 361 21507	MOTOR ASSY
24 1 1	4822 277 10749	SWITCH MUTE
34 1 1	4822 502 12001	M 2 X 4PANZNBK
35 1 1	4822 502 12001	M 2 X 4PANZNBK
36 1 1	4822 502 12001	M 2 X 4PANZNBK
37 1 1	4822 502 12001	M 2 X 4PANZNBK
38 1 1	4822 502 12001	M 2 X 4PANZNBK
39 1 1	4822 502 12001	M 2 X 4PANZNBK
60 1 1	4822 277 10749	SWITCH MUTE
77 1 1	4822 502 12001	M 2 X 4PANZNBK
8001	4822 321 61531	CABLE, 2P
3 8001	4822 267 30871	CONNECTOR 2P.
8002	4822 321 61532	CABLE, 4P
5 8002	4822 267 40672	DISC 4POL.
81 1	4822 691 30275	MECH UNITCDM-9
8 81 1	4822 701 10425	M 2 X10T/PANZNBK
9 81 1	4822 701 10425	M 2 X10T/PANZNBK

LUBRICATING INSTRUCTIONS

Car loader

* A) The roller spindle (pos 28) : 2 x on diameter 2,5 mm.
(On the bearing points)

* B) The spindle of the swing bracke (all lenght).

* C) The spindles of the gearwheels (3 x all lenght).

* D) The pivot bearing of the pivot cover (pos 69)
(in the middle of the closing plate)

* E) E1The roller spindle on the top on diameter 1,2 mm
E2The metal pin on the motorplate assy (pos 15)
(Diameter 1,2 mm).

* F) The sliding surface on the top control bracket (pos 73)
in which the plastic pen of the motorplate assy is guiding.

* G) G1The guiding grooves (2 x) on the control bracket in
which the guide pins of the chassis are guiding.
G2The tag on the control bracket which actuate the switch brackets.

* H) The tag on the pressure plate (pos 66).

\# I) The suspension pins (2 x) of the chassis.
The suspension pins (2 x) of the motorplate assy.

* J) The teeth of the control bracket.

* K) On the control bracket the sliding surface of the detection bracket.

* MOLYCOTE PG 65/Q5-7565 code nr. 1304 501 0841

\# ETHANOL code nr. 1322 506 35201

Capacitors

2000	5322 122 32654	22NF10%X7R 63V
2001	5322 122 32654	22NF10%X7R 63V
2002	5322 122 32268	470PF 10% 50V
2003	4822 122 31746	1000PF 2%NP0 63V
2004	4822 122 32916	220NF10%X7R 63V
2005	4822 124 22646	47UF20% 16V
2006	4822 122 33584	220PF 5%
2007	4822 122 32916	220NF10%X7R 63V
2008	4822 122 33584	220PF 5%
2009	4822 121 51436	820NF10% 63V
2010	5322 122 33816	2200PF 2%NP0 63V
2011	4822 122 32542	47NF10%X7R 63V
2012	5322 122 32531	100PF 5%NP0 50V
2013	4822 122 33177	10NF 20% X7R 50V
2014	4822 122 31746	1000PF 2%NP0 63V
2015	4822 126 12104	12NF 5%
2016	5322 122 32654	22NF10%X7R 63V
2017	4822 126 12106	220NF 5%
2018	5322 122 32654	22NF10%X7R 63V
2019	4822 122 33177	10NF 20% X7R 50V
2020	4822 122 32916	220NF10%X7R 63V
2100	4822 122 32916	220NF10%X7R 63V
2101	4822 121 51361	5,6NF 2% 160V
2102	4822 121 51051	4.7NF 1% 160V
2103	4822 121 51262	910PF 1% 400V
2104	4822 124 22646	47UF20% 16V
2105	4822 126 12105	33NF 5%
2106	4822 122 32916	220NF10%X7R 63V
2107	4822 122 32916	220NF10%X7R 63V
2108	5322 122 32654	22NF10%X7R 63V
2109	5322 122 32654	22NF10%X7R 63V
2110	4822 122 32916	220NF10%X7R 63V
2111	4822 122 32916	220NF10%X7R 63V
2112	4822 122 33177	10NF 20% X7R 50V
2113	4822 122 32916	220NF10%X7R 63V
2114	4822 122 32916	220NF10%X7R 63V
2200	5322 122 32654	22NF10%X7R 63V
2201	4822 122 32916	220NF10%X7R 63V
2202	5322 122 32452	47PF 5%NP0 63V
2203	5322 122 32452	47PF 5%NP0 63V
2300	5322 122 33816	2200PF 2%NP0 63V
2301	5322 122 32452	47PF 5%NP0 63V
2302	4822 122 32916	220NF10%X7R 63V
2304	4822 122 33496	100NF10%X7R 63V
2305	4822 124 80453	100UF 20% 10V
2306	5322 122 32654	22NF10%X7R 63V
2307	4822 122 33584	220PF 5%
2308	4822 122 33496	100NF10%X7R 63V
2309	4822 124 23582	220UF 20% 10V
2311	4822 122 32916	220NF10%X7R 63V
2312	5322 122 32658	22PF 5% 50V
2313	5322 122 32658	22PF 5% 50V
2314	5322 122 32658	22PF 5% 50V
2315	4822 124 80109	0.22UF20% 50V
2316	5322 126 10223	4,7NF 5% XR7
2317	2222 580 16523	4,7NF 5% XR7
2320	4822 124 23582	220UF 20% 10V
2321	4822 122 33496	100NF10%X7R 63V
2322	4822 122 33496	100NF10%X7R 63V
2323	4822 122 33496	100NF10%X7R 63V
2324	4822 124 80453	100UF 20% 10V
2325	4822 124 22646	47UF20% 16V
2326	4822 122 32916	220NF10%X7R 63V
2327	4822 124 23279	22UF20% 16V
2328	5322 122 32654	22NF10%X7R 63V
2329	5322 122 32654	22NF10%X7R 63V
2331	4822 122 32916	220NF10%X7R 63V
2332	4822 124 11353	1UF 20% 16V
2333	5322 122 32268	470PF 10% 50V
2334	5322 122 32531	100PF 5%NP0 50V
2335	5322 122 32268	470PF 10% 50V
2336	5322 122 32531	100PF 5%NP0 50V
2337	4822 124 11353	1UF 20% 16V
2338	4822 122 33175	2,2NF 20% X7R 50V
2339	4822 122 33175	2,2NF 20% X7R 50V
2340	4822 122 33496	100NF10%X7R 63V
2341	4822 122 33496	100NF10%X7R 63V
2342	4822 122 33496	100NF10%X7R 63V
2400	4822 122 33496	100NF10%X7R 63V
2500	4822 122 33496	100NF10%X7R 63V
2501	4822 122 33496	100NF10%X7R 63V
2502	4822 122 33496	100NF10%X7R 63V
2600	4822 124 23282	1UF20% 50V
2601	4822 124 22646	47UF20% 16V
2602	5322 122 32654	22NF10%X7R 63V
2603	4822 124 22646	47UF20% 16V
2604	4822 124 22646	47UF20% 16V
2763	4822 124 23279	22UF20% 16V
2764	4822 124 23279	22UF20% 16V

Resistors

3000	4822 051 20472	4K70 5% 0,1W
3001	4822 051 20104	100K00 5% 0,1W
3002	4822 051 20229	22R00 5% 0,1W
3003	4822 051 20229	22R00 5% 0,1W
3004	4822 051 20101	100R00 5% 0,1W
3005	4822 051 51203	12K00 1% 0,125W
3006	4822 051 20101	100R00 5% 0,1W
3007	4822 051 20102	1K00 5% 0,1W
3008	4822 051 52403	24K00 1% 0,125W
3009	4822 051 53003	30K00 1% 0,125W
3010	4822 051 10222	2K20 2% 0,25W
3011	4822 051 20243	24K00 5% 0,1W
3012	4822 051 20224	220K00 5% 0,1W
3013	4822 051 20823	82K00 5% 0,1W
3014	4822 051 20478	4R70 5% 0,1W
3015	4822 051 20912	9K10 5% 0,1W
3016	4822 051 20229	22R00 5% 0,1W
3017	4822 051 51803	18K00 1% 0,125W
3018	4822 051 51203	12K00 1% 0,125W
3019	4822 051 20229	22R00 5% 0,1W
3020	4822 051 20243	24K00 5% 0,1W
3021	4822 051 20562	5K60 5% 0,1W
3022	4822 051 20223	22K00 5% 0,1W
3100	4822 051 10228	2R20 5% 0,25W
3101	4822 116 83634	5K6 0,25% 0.25W
3102	4822 050 22208	2R20 1% 0,6W
3103	4822 116 83634	5K6 0,25% 0.25W
3104	4822 051 10829	82R00 2% 0,25W
3105	4822 116 83634	5K6 0,25% 0.25W
3106	4822 051 20229	22R00 5% 0,1W
3107	4822 116 83634	5K6 0,25% 0.25W
3108	4822 051 20154	150K00 5% 0,1W
3109	4822 051 51803	18K00 1% 0,125W
3110	4822 051 51302	1K30 1% 0,125W
3111	4822 051 20512	5K10 5% 0,1W
3112	4822 051 20224	220K00 5% 0,1W
3113	4822 051 20223	22K00 5% 0,1W
3114	4822 051 54703	47K00 1% 0,125W
3115	4822 051 51803	18K00 1% 0,125W
3116	4822 051 20223	22K00 5% 0,1W
3117	4822 051 20473	47K00 5% 0,1W
3118	4822 051 20222	2K20 5% 0,1W
3119	4822 051 20332	3K30 5% 0,1W
3120	4822 051 20103	10K00 5% 0,1W
3200	4822 051 20223	22K00 5% 0,1W
3201	4822 051 20223	22K00 5% 0,1W
3202	4822 051 20223	22K00 5% 0,1W
3203	4822 051 20101	100R00 5% 0,1W
3204	4822 051 20224	220K00 5% 0,1W
3205	4822 051 20334	330K00 5% 0,1W
3206	4822 051 20104	100K00 5% 0,1W
3300	4822 051 20222	2K20 5% 0,1W
3301	4822 051 20223	22K00 5% 0,1W
3302	4822 051 20223	22K00 5% 0,1W
3303	4822 051 20478	4R70 5% 0,1W
3304	4822 051 20222	2K20 5% 0,1W
3305	4822 051 20008	0R00 5% 0,1W
3307	4822 051 10228	2R20 5% 0,25W
3311	4822 051 20224	220K00 5% 0,1W
3312	4822 051 20473	47K00 5% 0,1W
3313	4822 051 20182	1K80 5% 0,1W
3314	4822 051 20182	1K80 5% 0,1W
3319	4822 051 20229	22R00 5% 0,1W
3320	4822 051 20473	47K00 5% 0,1W
3321	4822 051 20104	100K00 5% 0,1W
3323	4822 051 53003	30K00 1% 0,125W
3324	4822 051 53003	30K00 1% 0,125W
3325	4822 051 20103	10K00 5% 0,1W
3326	4822 051 20104	100K00 5% 0,1W
3327	4822 051 20104	100K00 5% 0,1W
3328	4822 051 53003	30K00 1% 0,125W
3329	4822 051 53003	30K00 1% 0,125W
3330	4822 051 20102	1K00 5% 0,1W
3331	4822 051 20102	1K00 5% 0,1W
3332	4822 051 20229	22R00 5% 0,1W
3333	4822 051 20229	22R00 5% 0,1W
3400	4822 051 20154	150K00 5% 0,1W
3401	4822 051 10562	5K60 2% 0,25W
3402	4822 051 10682	6K80 2% 0,25W
3403	4822 051 10102	1K00 2% 0,25W
3404	4822 116 30426	4K7 3% 0.1W
3500	4822 051 20472	4K70 5% 0,1W
3501	4822 051 20102	1K00 5% 0,1W
3502	4822 051 20472	4K70 5% 0,1W
3503	4822 051 10008	0R00 5% 0,25W
3504	4822 051 20229	22R00 5% 0,1W
3505	4822 051 20229	22R00 5% 0,1W
3506	4822 051 20472	4K70 5% 0,1W
3507	4822 051 20472	4K70 5% 0,1W
3508	4822 051 20222	2K20 5% 0,1W
3509	4822 051 20562	5K60 5% 0,1W
3511	4822 051 20478	4R70 5% 0,1W
3512	4822 051 20102	1K00 5% 0,1W
3513	4822 051 20102	1K00 5% 0,1W
3514	4822 051 20334	330K00 5% 0,1W
3515	4822 051 20334	330K00 5% 0,1W
3516	4822 051 20102	1K00 5% 0,1W
3517	4822 051 20479	47R00 5% 0,1W
3600	4822 051 20122	1K20 5% 0,1W
3601	4822 051 20272	2K70 5% 0,1W
3602	4822 051 20472	4K70 5% 0,1W
3603	4822 051 10228	2R20 5% 0,25W
3604	4822 051 10228	2R20 5% 0,25W
3778	4822 051 20104	100K00 5% 0,1W
3779	4822 051 20479	47R00 5% 0,1W
3780	4822 051 20104	100K00 5% 0,1W
3799	4822 051 20479	47R00 5% 0,1W
4100	4822 051 20008	0R00 5% 0,1W
4200	4822 051 20008	0R00 5% 0,1W
4700	4822 051 20008	0R00 5% 0,1W
4701	4822 051 20008	0R00 5% 0,1W

Diods

6100	5322 130 31928	BAS16
6200	5322 130 31928	BAS16
6501	5322 130 34337	BAV99
6502	5322 130 34337	BAV99
6600	4822 130 33996	BZX84-C9V1
6601	5322 130 33671	BZX84-C6V2
6602	5322 130 34337	BAV99

IC's

7000	4822 209 31131	L272D
7001	4822 209 73234	TDA8808T/C3
7003	5322 130 61569	BC868
7100	4822 209 62059	TCA0372DP1
7101	4822 209 31973	TDA8809T/C2/S1/13
7102	4822 130 60511	BC847B
7103	5322 130 41983	BC858B
7200	4822 130 60511	BC847B
7201	4822 209 32153	MC68HC705C8CFN-CDM9V06
7202	5322 209 14481	HEF4053BT
7302	4822 209 30388	SAA7341GP
7303	4822 209 31553	HY6264ALJ-10
7304	4822 209 31131	L272D
7305	5322 130 41983	BC858B
7306	4822 209 30095	LM833D
7400	4822 209 30510	LM 2904D
7500	4822 209 31131	L272D
7600	4822 130 60511	BC847B
7602	4822 130 60511	BC847B

Miscellaneous

1001	4822 267 50838	14 PIN
1001	4822 214 52063	PCB CDM9-MOD-4
1020	4822 265 41209	12P
1030	4822 265 30957	4P
1040	4822 265 30956	2P
1050	4822 265 30958	2P
1200	4822 242 70831	CSA 4,00MG
1300	4822 242 81414	16,934MHZ
1002	4822 691 10366	
1 1002	4822 691 10396	CARLOADER
1003	4822 267 51146	12 PIN GOLD
2001	4822 122 33496	100NF 10% XR7 63V